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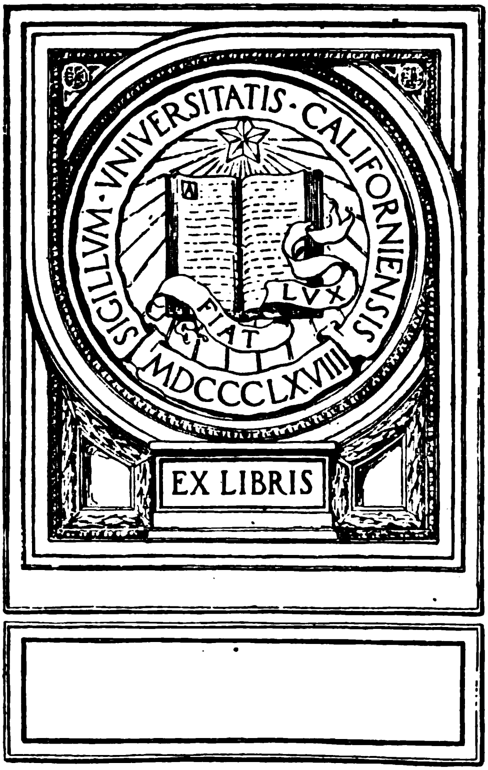

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THE NEW RATIONALISM

THE DEVELOPMENT OF A CONSTRUCTIVE REALISM UPON THE BASIS OF MODERN LOGIC AND SCIENCE, AND THROUGH THE CRITICISM OF OPPOSED PHILOSOPHICAL SYSTEMS

BY

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PREFACE

As I send this manuscript to the publishers, I am keenly aware of how far the results that it presents fall short of attaining that ideal both of method and of accomplishment which has been before me during the period of composition, and which I have explained in Chapters I. and III. Yet coincidentally with the closing of my labors I find that I am convinced more strongly than ever that, although there are many other ways, of undoubted value, in which to study philosophy, nevertheless the point of view and the method of treating problems which this book presents offer one way or mode of approach that has thus far been of much too infrequent use in philosophical investigation. For it has been my experience, especially during a number of years of teaching at Princeton University, as well as of presenting philosophical problems to the scientific workers of the Marine Biological Laboratory at Woods Hole, Mass., that there is, at present at least, a much deeper interest in a systematic than in a historical treatment of philosophy. An opportunity to satisfy such an interest would be presented to a far greater extent than it now is, if only the effort were made in philosophy, as it is in science, not to emphasize history, but to investigate problems of fact, and finally to obtain such a fairly extensive body of knowledge as will receive general acceptance and be recognized as meaning a well-defined advance and progress.

The present tendency in philosophy, at least in our educational institutions, is, however, directly opposed to such a procedure, for it is to the almost exclusive study of the history of philosophy that both student and general reader are urged and directed. The result is that the average student of philosophy is left so perplexed through, *e.g.*, the multiplicity of systems which his study discloses to him, that his dissatisfaction usually far exceeds his satisfaction with the outcome of his intellectual efforts. But even if this is not true of the student, it most

374188

certainly is the case with the scientist, who is thereby frequently moved not only to the sharpest criticism of all philosophy whatsoever, but also to the total neglect of philosophical considerations where these cannot well be neglected.

This book, therefore, represents the results of departing abruptly from the historical method, and of endeavoring to ascertain both *what those postulates are from which each philosophical system is logically derivable,* and also, whether there is, finally, *one body of principles that is common to all systems, and logically presupposed by them.*

It is my conviction both that there is such a single "doctrine," difficult though it may be to discover *what* it is, and also that this doctrine in its fundamentals is *logically present in every effort to philosophize rationally.*

It is for these reasons, therefore, that I have chosen the title, *The New Rationalism,* for a position which also becomes, as a developed theory, a Neo-realism of *ideals* that are discovered by reason, as well as of those *reals* that are disclosed to the senses and that form what we call nature.

A further constant stimulus to my efforts has been the conviction, also, that, if it is to be admitted that philosophy is of direct and far-reaching effect on life—and what more convincing demonstration of such an effect could there be than the origins of the present world-crisis?—then that philosophy which the world needs to accept and to act upon at the present time, is one that holds to the *actuality of ideals,* discovered by reason, rather than one that justifies our living only in accordance with our biological nature. For it is such a naturalistic philosophy and ethics that, it seems to me, has not only actuated the present attack on civilization, but is also persistently used to justify this attack.

There is need, therefore, not only of combating by physical force those physical forces to the use of which such a naturalistic philosophy has led, but also of combating and *refuting* by argument and by philosophical investigation that philosophy which is used to justify such a physical attack—if only such a refutation can be found. For if such a refutation cannot be found, then *intellectually* our attitude should be one of calm acceptance of the outcome, whatever it may be.

It is a most important problem, then, to ascertain whether or not there is possible a *philosophical* refutation of this naturalism that is challenging the world to the very foundations of its civilization, and, if there is such a refutation, to ascertain *what* it is, or where its means can be found.

Such means are, however, surely not those of merely dogmatically denying the truth of Naturalism, nor of studying its history or development as a philosophy, nor, seemingly, of appealing to the opposed system of Idealism, which in the face of the present horrors that afflict humanity seems to have suffered collapse in its basic doctrine that "all's well with the world." But, if the refutation of Naturalism is not possible by such means, then it would seem to me that it is possible only by a philosophy which can demonstrate that, while some "things" evolve, not all "things" are subject to the principle of evolution; that, while a ruthless struggle for existence may be one condition for progress, coöperation is another and, perhaps, more important condition; that, while the best may survive (and may not), the mere fact of survival is itself not identical with *being the best;* that, while justice may be useful to him who survives, there are, nevertheless, other reasons for the practice of justice than its usefulness; and, finally, that, although *nature* is undeniably *fact, not all* fact is identical with ruthlessly combating, slowly evolving, strongest-surviving nature, but that there are some realities which are beyond nature, and which, though they cannot be seen by the eye of the body, are nevertheless revealed to reason.

The only philosophy, however, which can demonstrate these things,—*i.e.*, which can *refute* and not merely *deny* Naturalism—is one that, in fearlessly submitting all "things" to reason's testings, includes among these "things" the very *means* either of defense or of refutation, namely, *reason itself*. And the only outcome at which such a rational "criticism" of reason itself can *consistently* arrive is one that *justifies its own procedure,* and, therefore, any *rational* procedure whatsoever, as such. But such an outcome means the frank recognition that there are not only facts of the senses, but also facts of the reason, and that *not all fact* is part of nature or of evolution. Such a philosophy is, however, Rationalism.

It is, therefore, both for the student and for the general reader who are interested, *first,* in problems that concern fact rather than history, and, *secondly,* in the more specific problem, What is the correct philosophy, Naturalism, or some other opposed system? that this book is written. It is, also, for such readers, in case they are not familiar with psychology and logic, that I have presented certain questions, such as the Problems of Method of Part I., Section III., that are not usually offered in an "Introduction." These Chapters may be omitted by one who is conversant with their contents, as may also Chapters II., XXII., XXIV., XLIII., VII.-X., if they are found too difficult.

In conclusion I desire to express my appreciation of the sympathy and inspiration that I have received from my friends, Professors E. B. Holt, W. T. Marvin, W. P. Montague, R. B. Perry and W. B. Pitkin in the development of a point of view, a method, and, finally, a positive philosophy. The present volume is not coöperative, as was *The New Realism* in which my five friends and myself collaborated, but it is, nevertheless, in part an outgrowth of frequent discussions with these friends, and of definite attempts to coöperate.

My thanks are also due my friend, Mr. Henry Lane Eno, who, in thorough sympathy with the general character of my endeavor, has kindly read the greater part of the manuscript. I also desire to acknowledge my obligation to my friend and colleague, Professor H. C. Longwell, for his careful reading of the proofs.

Finally, I should explain, that the bibliographical references are intended, not to be complete, but only to indicate either the more important literature on a topic under discussion, or those places where the correctness of my assignment of certain specific positions to certain writers may be confirmed.

PRINCETON,
October 10, 1917.

CONTENTS

PART I

PAGE
INTRODUCTION xv

SECTION I

THE PROBLEM OF THE POINT OF VIEW

CHAPTER
I POSTULATES AND ASSUMPTIONS 3
II REALISM AND LOGIC 12
III THE OLD AND THE NEW LOGIC 25
  I Introductory 25
  II The Origins of the Traditional Logic 29
  III The Formulation and the Criticism of the Traditional Logic 35

SECTION II

THE HISTORICAL PROBLEMS OF PHILOSOPHY

IV INTRODUCTORY 44
V THE ONTOLOGICAL PROBLEM 51
VI THE COSMOLOGICAL PROBLEM 54
VII THE TELEOLOGICAL PROBLEM 57
VIII THE THEOLOGICAL PROBLEM 62
IX THE PROBLEM OF VALUES 66
X THE EPISTEMOLOGICAL PROBLEM 71
XI THE PSYCHOLOGICAL PROBLEM AND THE NATURE OF CONSCIOUSNESS 88

SECTION III

METHODS AND PROBLEMS OF METHOD

I THINKING

XII REASONING BY WORDS AND THE PSYCHOLOGY OF THINKING 95
  I Introductory 95
  II The Thinking Situation 95
  III The Psychology of Thinking; Symbols 96
  IV Grammar 99

CHAPTER PAGE
XIII THE LOGICAL ASPECTS OF THINKING: INTERPRETATIONS OF THE NATURE OF LOGIC 99
  I The Realistic View of Logic 100
  II The "Psychologizing" Tendency 105
  ✗ III The Pragmatic Tendency 109

II THE TRADITIONAL TECHNICAL METHODS OF REASONING

XIV THE CATEGORICAL SYLLOGISM 111
XV THE TRUTH OF PREMISES 119
  I The Regress of Premises 119
  II Common Sense and the Social Tradition . . . 120
  III Induction 121
  IV How Facts Are Given 122
    ✓ 1 Sense Experience 123
    2 Intuition, Feeling, and Emotion 124
    3 Memory 126
    4 Imagination 126
    5 Self-Evidence 129
    6 The Inconceivability of the Opposite . . 130
    7 Presupposition by Denial 132
XVI THE NATURE OF CONTRADICTION 136
XVII THE DISJUNCTIVE SYLLOGISM 141
XVIII THE HYPOTHETICAL SYLLOGISM 144
XIX THE DILEMMA 148
XX ANALOGY 152

III ANALYSIS AND THE NEW LOGIC

XXI FURTHER IMPLICATIVE SITUATIONS AND NEW METHODS OF ESTABLISHING PREMISES 155
XXII ANALYSIS 158
XXIII ANALYSIS BY INCORRECT PRINCIPLES 160
XXIV MISINTERPRETATIONS OF CORRECT ANALYSIS 170
XXV THE METHODS OF THE NEW LOGIC: SUMMARY 173

IV THEORIES OF RELATIONS

XXVI THE THEORIES OF EXTERNAL AND INTERNAL RELATIONS 176
  I The Formulation of the Theories 176
  II The Proofs or Arguments for the Theories of Relations 178
    1 The Theory of External Relations 178
    2 The "Modification" Theory of Relations . 182
    3 The Underlying or Transcendent Reality Theory of Relations: Criticism of the Argument 185

CHAPTER PAGE
XXVII Types of Relations, of Wholes, and of Unities . . 190
  I Types of Relations 190
  II Types of Wholes 192
  III Types of Unity 197
  IV Theories of Relations and Types of Logic . . 198
  V Material Principles of Proof 200

PART II

SECTION I

INTRODUCTORY

XXVIII The Problem about Problems 203
  I The Epistemological Problem 203
  II The Value-Centric Predicament 206
  III The Solution of the Ego-Centric Predicament . . 208

SECTION II

CAUSATION PHILOSOPHIES

✓ XXIX Phenomenalism 216
  I The Logical Derivation of Phenomenalism . . 216
  II Phenomenalism's Solution of Problems . . . 224
  III Criticism of Phenomenalism 230
✓ XXX Subjective Idealism 233
  I Logical Derivation 233
  II Subjectivism's Solution of Problems: Criticism . 237
✓ XXXI Positivism 241
  I Derivation 241
  II Criticism 251
✓ XXXII Naturalism 257
  I Detailed Naturalism 259
  II Materialism, Psychism and Dualism: Materialism 262
  III Universal Dualism or Parallelism 264
  IV Psychism: Criticism of Naturalistic Theories . . 268
XXXIII Pragmatism 273
  I Pragmatism's Anti-Substance Doctrine . . . 273
  II Pragmatism's Anti-Intellectualism 274
  III Pragmatism's Evolutionism 283
    1 Criticism: Truth and Falsity for Pragmatism 288
    2 The Degrees of Pragmatism's Evolutionism . 295
  IV General Criticism of Pragmatism 299
  V Conclusion 301

SECTION III

SUBSTANCE PHILOSOPHIES: OBJECTIVE IDEALISM

CHAPTER PAGE
XXXIV INTRODUCTORY 308
I Objective, Subjective, and Platonic Idealism . . 308
II The Historical Development of Objective Idealism out of Phenomenalism 311
XXXV THE LOGICAL DERIVATION OF OBJECTIVE IDEALISM: CRITICISM 317
XXXVI DEVELOPMENTS OF OBJECTIVE IDEALISM 328
I Theism and Pantheism 328
II Panlogism and Ethical Idealism 329
XXXVII FURTHER DEVELOPMENTS OF OBJECTIVE IDEALISM . . 335
I Voluntarism 335
II Vitalistic and Romantic Idealism 342
XXXVIII CONCLUSION 345
✓ I Monism's Solution of Philosophical Problems: Criticism 345
✓ II What can the Absolute One be? 354

SECTION IV

REALISM: FUNCTION PHILOSOPHIES

I THE CENTRAL DOCTRINE OF REALISM

XXXIX THE SOLUTION OF THE EGO-CENTRIC AND VALUE-CENTRIC PREDICAMENTS 364
XL REALISM'S HYPOTHESES 372
I Knowing and Known Object may be Qualitatively Different 373
II Illusory Objects are Objective 374
III 1 Objects may be Genuinely Known 378
2 They may Become Known and Cease to be Known 378
3 Not All Objects are Known 378
IV Other Instances of External Relations. The Freedom of Reason 382
V Philosophical Problems not Generated by their History 396
✓ VI Truth an External and Non-causal Relation . . 396
VII Analysis does not Alter the "Thing" Analyzed 396
VIII Individualism and Skepticism are Logically False Positions 402
IX Analysis reveals Facts, and Mysticism is False . 402

CHAPTER PAGE
XLI THE PRINCIPLES OF REALISM 408
I There are Propositions 409
II There are Terms and Relations 409
III There is the Relation of Implication . . . 412
IV There is the Relation of Contradiction . . 414
V There is Consistency 418
VI There is a System of Propositions . . . 421
VII There are Specific Processes called Knowing, and There is Knowledge 423
VIII There is Truth 423
IX Truth is Distinct from Certainty 424
X The Nature of Truth is not the Same as the Outcome of Knowledge, *i.e.*, of its Successful and Satisfactory Working 425
XI Truth is Independent of its Proof and Tests . 426
XII Analysis is Possible 426
XIII Reason is Free to Follow the Implicative Structure of Reality 427
XIV An Analysis of the Knowing Situation is Possible 427
XV Truth is not a Completely Implicative System of Truths 427
XVI There is a System of Ideal Truth 428
XVII Knowing and Known Object may be Both Qualitatively and Numerically Distinct . . . 428
XVIII Particular Existent Entities are not the Only Objects that can be Known 429
XIX There are Two Types of Knowing, namely, (a) by Specification, (b) by Type 429
XX "Unknown" is not the Same as "Unknowable" 429
XXI Error is a Fact that can be Explained . . 429
XXII There are Certain Entities that are Related by Logical Priority 429
XXIII Relations are Themselves not Causally Related 429

II CONSTRUCTIVE AND DETAILED REALISM

XLII THE ONTOLOGICAL PROBLEM AS SOLVED BY REALISM . . 430
I Introductory 430
II Realism's Solution of the Ontological Problem 432
XLIII REALISM'S SOLUTION OF THE COSMOLOGICAL PROBLEM . 437
I Normal Objects, II Error, and III The Nature of Consciousness 437
IV Complex Entities; V Creative Synthesis; VI Freedom 444
VII and VIII Space and Time as Part of the Cosmos: Infinity and Continuity 451

CHAPTER PAGE
ix Number 455
x Motion, Qualitative Change, and Evolution . 464
xi Consciousness as a Dimension and a Variable . 470
XLIV EPISTEMOLOGY AND PSYCHOLOGY AS PART OF COSMOLOGY 486
XLV THE REALISTIC DOCTRINE OF VALUES 496
XLVI REALISM'S TELEOLOGY AND THEOLOGY 507

INTRODUCTION

The reader familiar with philosophical literature will find in this book a not inconsiderable departure from the usual presentation and treatment of the problems, methods, and systems of philosophy. Such a departure, however, has been deliberately adopted by the author, not out of any mere desire to be exceptional, but because of a philosophical and scientific point of view of the correctness of which he is deeply convinced. Some of the most notable features of this point of view and of the departure that proceeds from it are, briefly, as follows:—

I. Genuine philosophical problems are regarded as being independent of their historical origin, setting, and development. This, of course, does not imply that these problems and the systems of philosophy which are sets of solutions of them, have not had a history. But, if the problems are real, and not false, it means that, while the consciousness of the problems has had a history, the problems themselves are not necessarily historical in character, nor conditioned by the development of the consciousness of them. Not all problems can be admitted to be historical or genetic, since, if history itself presents *real* problems, there may be *other problems of fact* that, as such, are *not* conditioned by their history and development.

II. Each of the several great *systems* of philosophy is regarded as a *set of solutions* (of philosophical problems) that are obtained by the use of certain methods and presuppositions which are in most cases *only assumed*, either tacitly or explicitly, but not established and proved. These methods and presuppositions, moreover, have been regarded and employed in the past as absolute and self-evident, chiefly because of the influence of *tradition* on individual philosophers. They now, however, can be restated in a purely logical and disinterested manner, and subjected to examination and criticism by a method quite analogous to that strictly scientific procedure which has recently been adopted in the examination of the several geometrical systems, namely, the Euclidean, Lobatchewskian, and Riemannian, not, of course, in reference to their history, but to their *self-consistency,* their *basic postulates* or so-called axioms, and their *logical structure.*

III. The position is taken and developed at length, that most great philosophical systems have been worked out under the *domination* of a logic and of certain philosophical concepts that have come down in the tradition which emanated from Aristotle. This tradition is one that recognizes *chiefly* only a limited number of *relations* between entities, such as the relations of *similarity* and *difference,* as well as a limited number of philosophical concepts, such as *cause* and *substance,* so that it is limited as an *organon, or method.*

IV. Historical study reveals the domination of this Aristotelian tradition in its several phases, but does not so readily disclose its origin. However, this difficulty is to be expected if the character of the tradition is due to the unconscious influence of certain entities on its initiators. *But that hypothesis which accounts both for the specific character of the logic and for the concepts which have dominated most traditional philosophical thinking is, that the physical thing, conceived as identical with a substratum in which qualities inhere, occupied the attention of the great philosophical pioneers more than did relations and events.* This being the case, one should expect a logic of a specific kind, namely, a logic that is modeled after *the most patent relations* among physical things, and these are:— (1) *independence of order,* or mere *additiveness,* along with (2) *resemblance* and (3) *difference,* by virtue of which *there are classes,* and (4) the *inclusion* of one class in another, either completely, or partially, or negatively. Furthermore, one should expect philosophies that are based either on the view that all entities are (5) in *causal interaction* with one another, or on the view that entities are (6) *substances or substrata* in which attributes (7) *inhere,* or, (8) in some cases, on both views combined.

The laws of algebraic addition

These expectations are fully confirmed by the character of the greater part of philosophical development, in which there have appeared a series both of causation-philosophies and of substance-philosophies, though with neither of these fully excluding the other in any one instance. We may therefore say, if a homely, but most expressive term may be coined, that philosophy has largely been "thingized" throughout its entire history.

V. At the same time that philosophy has been, throughout most of its history, under the domination of the Aristotelian tradition, an independent development has been taking place in science, especially for the last four hundred years. In this development *a logic* has been used that is radically different from the logic of the tradition, while the concepts of *"relation"* and of *"event"* or "happening" have played the dominant rôle as *philosophical* principles of thinking, rather than the concepts of *substance* and *cause.* This "new" logic and these principles have only recently come to full consciousness and received careful and accurate formulation. The logic is not limited to the logic of classes and, therefore, to such relations as similarity and inclusion, but is essentially the "science of order"—a principle which, as identical with the non-additive relationship of parts to form a whole, allows of the appearance and subsistence in the whole of qualities that are lacking to the parts. It fully recognizes also (1) the *functional relationship* as opposed to the *causal,* and (2) those asymmetrical and transitive relations that are present in *series,* such as the series of positive integers in order of magnitude. A pivotal point, also, in this new logic is the discovery (3) of the complete *compatibility of relatedness and independence,* as instanced in a number of respects in the functional relation.

VI. From the point of view and by the method which this new and non-Aristotelian logic furnishes, a number of important philosophical positions are found both to be logically justified and to receive empirical confirmation.

One of the most important of these positions is, that the relationship between *knowing* and *that which is known,* whatever that object may be, is but another instance of entities that are related and yet independent, which means, of course, that *knowing does not create nor even affect that which is* (to be) *known,* in contradistinction from the result which is obtained if the problem of knowing is "solved" by the Aristotelian logic and by the principles of *cause* and *substance*. This epistemological position is both Rationalism and Realism.

Another position or result is, that the entities which can be known (*in this way*) are not limited to those of the physical and mental "worlds," but include, as well, universals and such ideals as perfect justice, which, though they may never "exist," are nevertheless facts.

It is also found that recent attacks on intellectual analysis are really baseless because arbitrarily and unjustifiably they limit intellect to the use of a logic and of methods that are Aristotelian, and so seem to be able to demonstrate its failure; whereas, if in place of this traditional logic and method, the principles of the new logic be granted to intellect, it can be shown as inevitably to succeed.

PART I

PROBLEMS AND METHODS

SECTION I

THE PROBLEM OF THE POINT OF VIEW

CHAPTER I

POSTULATES AND ASSUMPTIONS

In presenting an examination and analysis of the several great philosophical systems, not historically, but according to their success or failure in the solution of philosophical problems, and their logical dependence upon one or another set of initial assumptions, the writer has no intention to minimize the interest and importance of that study of philosophy which concerns its development. The literature of philosophy, however, is already full of both books and articles that are historical. There is opportunity, then, for a volume which has resulted from the conviction that, although philosophical problems and their manifold solutions have both had a history, nevertheless these problems are not in every instance generated by their history, any more than are the problems of the science of history itself.

This statement requires, perhaps, some elucidation, since the term *history* is somewhat ambiguous. It may be used to designate the actual development, throughout one time period or another, of human thought, ideas, and institutions, or of the structure and functions of living organisms, or the evolution of chemical elements, or planets and suns. For the modern view is that *all* these evolve and have a history. The term may also be used to mean the scientific, or at least the systematic study of this development and evolution in any specific instance. Sometimes, however, the term is so employed that it seems to have both meanings at once, whereupon confusion arises. In this volume, however, it is the first meaning that concerns us most. Therefore, unless otherwise indicated, the term will be used to identify history with development and evolution. When used in the second sense we shall refer specifically to history as a science.

With these distinctions made, the statement is clear, that history as a science has itself had a history or development. When this specific development is studied, as it is, *e.g.*, in investigating the progress in historical methods and canons, we have the history of history. We may conclude, then, that history as development, history as a science, and the history of history itself are three different "things," and that the distinction between them is essential.

It is important next to note that history as a science does not generate its own problems—at least, not all of them. The most it can do is to focus the attention of historians upon one kind of problem rather than upon another, as, *e.g.*, upon that branch of history which concerns itself with the rule of kings rather than with the aspirations and deeds of the people ruled. *As a science* history is selective, not generative of its own problems, unless these problems be false ones,—which is not beyond the range of possibilities.

That history as a science must always be rewritten from the point of view of the present, is a *dictum* both frequently repeated and widely accepted. But the reinvestigation of that which is past fails of its purpose, unless there are *new methods and points of view* which themselves reveal facts and truths that are not historical. Indeed it may be that it is only by such truths and facts, and by such methods and points of view, now to be regarded as correct, that the real character of the past, oftentimes in its falsity of hypothesis and of problem, can ever become known.

In other fields, *e.g.*, in biology, the situation is quite similar. There has been a development of biological science, and there is a history of this development; but biology as a science is little concerned with the study of this specific development, and is certainly not identical with the history of itself.

A similar condition holds of many other sciences, such as logic, mathematics, mechanics, physics, chemistry, and astronomy. Indeed one can say of these sciences that they themselves would not have had a development and a history, had there not been problems which are themselves not developmental or historical.

Philosophy presents no exception to these principles. It is admittedly a fact of compelling interest and importance that there has been a long and extensive development of human thought and knowledge, especially among European peoples, which *because* of its character and influence is called *philosophical.* For philosophy means love of knowledge. It is to be admitted, too, that this great "stream of thought" has touched, or included in itself, to some degree at least, perhaps every phase of human activity, more especially religion, science, art, and politics. But the great *vis a tergo* in the onward sweep of its currents has been the conviction that there are problems of fact which have not been conditioned by their own development. Indeed, the consciousness that there are *problems of development* has itself been almost entirely absent throughout the greater part of history, as is witnessed by the comparatively recent origin of history, and especially evolution as sciences.

It is the writer's intention, therefore, to present in this non-historical way the several great philosophical systems of the past in respect to their problems, their methods and their solutions of problems (whether these be true or false), and thus to review the comparative anatomy and morphology, as it were, of these systems, not as they have grown up in a maze of surroundings and of antecedent historical causes, but as each may be regarded today as a set of possibly genuine solutions of problems. As systems that have this character, they are open to examination and analysis as to their logical structure, their presuppositions, their self-consistency, their implications, and their agreement with facts, quite as much as they are in respect to their historical setting. And an investigation of this character also serves the purpose of presenting to the reader, whether he has a knowledge of the history of philosophy or not, the various systems of philosophy as they may solve or fail to solve problems that concern facts.

Such a program, moreover, is not different from that of the scientist, *e.g.*, of the student of geometry, who elucidates the older geometries in the light of present geometrical science, and who examines and develops in a purely logical manner the *possible* geometrical systems, of which it is now well known there are several.

Indeed, the character and purpose of this volume may be further made clear by the statement, that the writer has long been convinced of the close resemblance between the situations in geometrical science *and* in philosophy. This resemblance, while it is important, is, however, not complete. The several geometries, *e.g.*, the Euclidian, the Lobatchewskian, and the Riemannian, are each self-consistent and free from internal contradiction.[1] This, however, cannot be said of the several philosophical systems, some of which are very evidently self-contradictory and self-refuting at critical points. Of this, Phenomenalism is a good example *in its denial*, on the one hand, of the possibility of knowing "things-in-themselves" (*i.e.*, things as they really are), *and in its assertion*, on the other hand, that this *is* the *real* "state of affairs" concerning knowing.[2] But geometrical and philosophical systems *both* seem to agree in this, that *there issues from them that which is put into them by way of initial postulation or assumption, be this tacit or explicit.* In geometry it is usually explicit or conscious, while in philosophy it is, more frequently than not, almost entirely tacit or unconscious. The study of the psychological influences on the philosopher, both past and present, demonstrates this quite convincingly.

The procedure of *explicit* postulation is commonly recognized to be the correct one in geometrical science today, though the history of geometry shows that it has not always been so. For not until Bolyai, in 1832, and Lobatchewsky, in 1835, independently found it possible to develop a consistent system of geometry by denying the Euclidean axiom of parallels, was there known a non-Euclidean system. This denial was made by postulating what amounted to the proposition, that through a given point not on a given line there are an infinite number of lines parallel to this given line. The non-Euclidean system that results is self-consistent and quite as applicable to our space as the traditional Euclidean geometry, as far as empirical measurement can determine.

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[1] See the bibliography at the end of this chapter.

[2] See Chap. XXIX.

Today, however, still other geometrical systems are known, of which the same assertion can also be made as regards their internal consistency and their application to the space in which we *measure* angles, distances, and the like. Among these systems there is the Riemannian, which is based on the postulate, among others, that through a given point not on a given line *no* lines pass that are parallel to this line.

Each of these geometries is a consistent body of propositions that are implied or generated by the original propositions which, as not derived from other propositions still "further back," are *freely postulated* or assumed. The process of discovering or deriving these later propositions that are implied by these initial ones is deduction. This process, so far as it is correct, follows, as it were, the thread-like network of *implications* that already *subsist* or *are facts*. Each system is said to apply to a manifold of *such* entities, whether these be points, lines, surfaces, or spheres, or something else, as can be "exhibited" to be in "consistent standing" with the propositions asserted about them. Thus a line, or a space of one dimension is found to be the *field* of entities, called "points," that are related in a very definite and specific manner, namely, by an asymmetrical and transitive relation.[3] But emphasis is placed upon the *relations* rather than upon the specific character of the entities that are related. In this way the necessity of making a definition, *e.g.*, of a point, is avoided, other than to assert that, *e.g.*, a point is such an entity as is "consistent with what is said about it." The test of the consistency of a system of initial postulates and implied propositions is the "exhibition" of a class of entities of which the system holds.

It is to be emphasized, however, that the geometer discovers a certain *freedom* to postulate[4] one set of initial propositions (axioms?) or another, so that, by taking advantage of this freedom, the several extant systems of geometry are developed. But it is further discovered that, although the Euclidean geometry historically preceded the other systems, nevertheless all the geometries are open to an examination and criticism that is quite *independent* of the temporal order of their appearance.

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[3] See Chap. XXVII.

[4] Cf. articles by H. C. Brown and Karl Schmidt in the general bibliography at the end of the chapter.

The writer of this book is convinced that a situation very similar to that which exists among the various geometries is to be found among the several great philosophical systems, notwithstanding certain obvious points of difference. In philosophy, as in geometry, there are fundamental divergences between the respective sets of propositions which constitute the different systems, and also between the respective manifolds of entities to which these propositions apply. Also, these differences result from initial postulates. However, unlike the results in geometry, in philosophy *not all* systems are found by empirical tests to apply equally well to the universe. Further, *not all* systems are self-consistent and free from self-contradiction, and finally, the right or the freedom to postulate is not recognized. Rather, in philosophy *the making of postulates that condition the remaining whole structure of a system,* is found in many instances to have been determined either by the emotional disposition of the individual philosopher, or, very frequently, by tradition, or by both together. Because of either of these two influences, or of both combined, fundamental philosophical assumptions are made unconsciously, or uncritically, and quite tacitly, and oftentimes with the support of the conviction that they are *necessarily true,* either because they are *self-evident,* or because their *opposite is inconceivable,* or both.[5] However, tests or evidence of this kind are found, on the one hand, to be generated by the influence of tradition and authority, and, on the other hand,—which is not surprising—to be thoroughly unreliable as criteria of that which they are held to reveal, namely, absolute truth. That which is self-evident or inconceivable to one person, or to one generation, is not to another; and it is *certainly not self-evident,* that that which is self-evident, or whose opposite is inconceivable, *must* be true, and could *not* be false. That it might be false, is itself *not* inconceivable.

But to become thus aware that it has been, not the unbiased investigation of facts, but rather the influence of tradition and authority that has led many of the great philosophers to develop their specific systems, is itself one of the first steps in freeing oneself from this very influence, and in establishing a firm foundation for further examination and criticism. On this basis one not only can discover that there have been great historical tendencies or postulates in philosophy, but also can *critically restate* these postulates, much as this is done in geometry, *i.e.*, both the postulates themselves and the philosophical systems that result from them can be *restated logically* and quite apart from their historical setting, and both postulates and systems can be examined for their self-consistency and compared with one another.

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[5] Cf. the examination of these tests in Chap. XV.

As a result it is found, not only that not all systems are self-consistent, but that some of them, and indeed perhaps *all* of them, *presuppose one system. This system, since it is one among systems, must, then, presuppose itself, and in this respect be self-consistent.*

This self-consistent and basic system, in the form in which it appears to the writer in respect to both its fundamental principles and its detailed structure, is philosophical Realism, the exposition and defense of which is here conducted by examining other, *opposed* systems as to their logical structure of primary postulates and derivative propositions, and not in their historical setting and development.

The opposed systems, of which this system is critical, and which are found to presuppose it, and, possibly, also to be self-contradictory, are classified, contrary to the usual more elaborate classifications, as fundamentally only *two*, and even these two can be shown to arise from *a common source and tradition*. These two systems are a causation-philosophy, represented by Phenomenalism, and a "substance" and monistic philosophy, which usually takes the form of Objective Idealism. The common source is the Aristotelian tradition, with its logic of classes, and its dominant concepts of *cause* and *substance*.

Other systems of philosophy, as they are usually classified, *e.g.*, as Subjective Idealism, Positivism, Naturalism, and Pragmatism, *and* as Voluntarism, Pan-logism,[6] and the like, are but specific modifications of these two more fundamental philosophies.

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[6] See Wm. James, *The Problems of Philosophy*, for the types of philosophical systems; also L. Stein, *Philosophische Strömungen der Gegenwart*.

These more specific systems thus fall together under two great heads because each is a product of one or the other of two great tendencies, which, on the one hand, have produced a rather definite *historical* succession of systems, and, on the other hand, are each identical *logically* with the tacit presupposition of a very definite set of metaphysical presuppositions. Thus, Subjective Idealism, Positivism, Naturalism, and Pragmatism (Naturalism up-to-date) present an historical sequence of systems which have resulted from the metaphysical assumption that *all things causally affect one another.*[7] On the other hand, the monistic systems of such philosophers as Spinoza, Fichte, Schelling, Hegel, Bradley and others have resulted from the assumption that *a numerically single, substance-like, underlying entity is necessary in order to mediate the relationships which are universal among all "things."*[8] In the last analysis, however, even these two basic logical and metaphysical doctrines are traceable to a common source, namely, the Aristotelian philosophy and logic, especially as each of these has come down in the tradition. It is because of the influence of this tradition, not only that these metaphysical principles have been postulated unconsciously and uncritically, but that they have been in many instances accepted as self-evident and their opposite regarded as inconceivable. The metaphysics of cause and substratum (substance) *and* the logic of classes, since these together form the core of the Aristotelian tradition, constitute, then, that philosophy from which later systems have diverged as branching genera and species from an ancestral tree.[9]

The Realism which is accepted, defended, and explained in this book is one that is based on logical and metaphysical doctrines that are directly opposed to the logic and metaphysics of the Aristotelian tradition. The logic is one that has long been used in the development of modern science, but that has only recently been formulated as the logic of series, or as the science of order, and that can be designated broadly as non-Aristotelian.[10] The metaphysics is one that *denies the universality* of causation and of substance, and that emphasizes relations. On this basis it is found that the knowing situation is of *such* a character that *the knowing process neither causally affects, modifies, or creates that which is known, nor demands an underlying entity to mediate the relationship between knowing and its object. For this reason the position is called Realism.* It is that position which results from discovering such empirical evidence, including non-Aristotelian logical principles, as *allows for a knowledge of all entities in their genuine character.* One of these entities is that very *"state of affairs"* which the position itself asserts to be true concerning the knowing situation. Certain other systems are not thus self-consistent.

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[7] See Chap. XXVI. on the modification theory of relations, and Chaps. XXIX.–XXXIII. on the systems that are developed from this.

[8] See Chap. XXVI. on the underlying-reality theory of relations, and Chaps. XXXIV.–XXXVIII. on the systems that are developed from this.

[9] See Chap. III. for the expansion of this hypothesis.

This Realism is, however, not one that *limits* the realm of entities that are knowable in their true character to the objects and relations of the *physical* universe, *and* to *conscious* processes. Rather, it is a Realism which *insists* also on the factuality and knowableness of *entities that are neither physical nor mental, nor "individual"* in the usual sense of this term as meaning *spatially and temporally particularized. All such entities* may be called *"subsistents"* to distinguish them from the temporally and perhaps also spatially particularized *existents.* They include what are frequently called "universals," and also "ideals" such as justice, and still other entities, such as numbers, and the ideal systems of mechanics. This Realism is one which holds that the realm of such subsistents, as entities that are *both knowable and yet independent of being known,* is even more varied and extensive than the realm of existential entities.[11] Indeed, as an important demonstration in the closing chapters of this book, it is shown that such worths and values, typified by justice and beauty, although they are ideals which are never completely attained, are, nevertheless, realities.

BIBLIOGRAPHY

Concerning the actual development of non-Euclidean systems, as well as the use of the method of postulation in *other* fields, see H. C. Brown in *Essays Philosophical and Psychological in Honor of William James*, 1908,

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[10] See Chaps. XXI.–XXV., XXVI., I. and II., 1, and Chap. XXVII.

[11] See Chap. XLIV.

pp. 425-459, and Karl Schmidt, Studies in the Structure of Systems, 4, "The Generating Problem," *Jour. of Phil., Psych. and Scientific Methods*, Vol. X., pp. 64-75, especially p. 73 on the *freedom to postulate*, etc.; also "Critique of Cognition and its Principles," *Jour. of Phil., Psych. and Scientific Methods*, Vol. VI., p. 281 ff.

Concerning (1) the method of postulation in *geometry*, or (2) the actual systems that result, see J. Bolyai, *The Science Absolute of Space*, trans. by G. G. Halsted, 1896; original edition in Latin, Editio Nova, by the Hungarian Academy of Science, Teubner, 1903; K. Bonola, *Non-Euclidean Geometry*, trans. by H. S. Carslaw, 1912; B. Erdmann, *Die Axiome der Geometrie;* D. Hilbert, *Foundations of Geometry*, trans. by E. J. Townsend; E. Husserl, *Logische Untersuchungen;* E. V. Huntington, *Sets of Independent Postulates for the Algebra of Logic*, trans. of the American Math. Society, 1904, Vol. V.; Wm. James, *A Pluralistic Universe*, Lecture I.; Lobatschewsky, *Geometrical Researches on the Theory of Parallels*, trans. by G. B. Halsted; R. H. Nunn, *Aims and Achievements of Scientific Method*, Chap. V.; H. Poincaré, *Science and Hypothesis*, 1905, Chap. III, on Non-Euclidean Geometries; B. Russell, *Foundations of Geometry*, 1897, and *Principles of Mathematics*, 1903; B. Riemann, *Über die Hypothesen welche die Geometrie zu Grunde liegen*, 1868, Abh. Ges. Göttingen, 1868; also in *Gesam. Werke*, 1892; F. C. S. Schiller, *Axioms as Postulates, in Personal Idealism;* O. Veblen, *A System of Axioms for Geometry*, trans. Am. Math. Soc., 1904, Vol. V.; J. W. Withers, *Euclid's Parallel Postulate*, 1908; F. S. Woods, *Non-Euclidean Geometry*, in Monographs on Topics of Modern Mathematics, ed. by J. W. A. Young, 1911; A. N. Whitehead and B. Russell, *Principia Mathematica*, 3 vols., Vol. I., Introduction; A. N. Whitehead, *Axioms of Projective Geometry*, 1906, and *Axioms of Descriptive Geometry*, 1907; J. W. Young. *Fundamental Concepts of Algebra and Geometry*, 1911.

CHAPTER II

REALISM AND LOGIC[1]

THAT ultimately *a realistic position* is taken in philosophy, *even when one attempts the opposite*,[2] and that this Realism is not limited to the acceptance alone of an existential world of physical and mental entities, has been, in the author's opinion, exceedingly well shown by Professor Josiah Royce in his Essay, "The Principles of Logic," in the volume entitled, *The Encyclopedia of the Philosophical Sciences, Logic*, 1913. Professor Royce probably would not have accepted this judgment as to the outcome of his demonstrations, but that the judgment is correct I shall endeavor to show by quoting[3] and discussing certain paragraphs of the essay. Professor Royce's essay will be examined in this way, both because it is a most timely and excellent presentation of recent results in the field of modern logic, and because of what seems to be its bearing on philosophical problems and their solution.

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[1] This chapter was originally published under the title of "Realistic Aspects of Royce's Philosophy," in the *Philosophical Review*, Vol. XXV., No. 3, in the number in honor of Professor Royce.

[2] Cf. the criticism, throughout Part II., of systems opposed to realism.

The essay is divided into three sections. The last two, making up its greater part, are (p. 67) "devoted to indicating, very summarily, the nature of a doctrine of which the traditional General or Formal Logic is but a part, and, in fact, a very subordinate part. To this doctrine the name 'The Science of Order' may be given. It is a science which is indeed incidentally concerned with the norms of the thinking process. But its character as a normative doctrine is wholly subordinate to other features which make it of the most fundamental importance for philosophy. It is today in a very progressive condition. It is in some notable respects new. It offers inexhaustible opportunities for future progress.'

Defining Applied Logic, or Methodology, as that "special and very extended" part of "Logic as a Normative Science" "which deals with the norms of thought in their application to the methods used in various special sciences," Professor Royce says (p. 69): "Methodology, taken in its usual sense as a study of the norms and methods of thought used in the various arts and sciences, is the mother of Logic taken in the other sense hereafter to be expounded. For the undertakings of Methodology lead to certain special problems, such as Plato and Aristotle already began to study, and such as recent inquiry makes more and more manifold and important." "They are problems regarding, *not* the methods by which the thinker succeeds, nor yet the norms of correct thinking viewed as norms, but rather the *Forms*, the *Categories*, the *Types of Order*, which characterize any realm of objects which a thinker has actually succeeded in mastering, or can possibly succeed in mastering, by his methods."

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[3] The meaning of the passages quoted is not altered by removal from their context.

Discussing some of the solutions of the problems of method as they have occurred in the development of philosophy, he cites (p. 71) the view of Plato, that (1) "*The realm of the Universals or 'Ideas' is essentially a System,* whose unity and order are of the first importance for the philosopher; (2) *Inference is possible because truths have momentous objective Relations,* definable precisely in so far as the process of inference is definable; (3) *The 'Order and Connection' of our rational processes,* when we follow right methods, *is a sort of copy of an order and connection which the individual thinker finds, but does not make.* One thus sets out to formulate the right method. One discovers, through this very effort, a new realm—*a realm of types, of forms, of relations.* All these appear to be at least as real as the facts of the physical world. And in Plato's individual opinion they are far more real than the latter."

Professor Royce then says (p. 72): "We are not in the least concerned to estimate in this discussion the correctness or even the historical significance of the Platonic Metaphysic,—a doctrine thus merely suggested. It is enough to note, however, that even if one sets aside as false or as irrelevant all the principal metaphysical conclusions of Plato, one sees that in any case the Methodology of the logician, even in this early stage of the doctrine, inevitably gives rise to the problem as to the relatively objective order and system of those objects of thought to which the methodologist appeals when he formulates his procedure. The Platonic theory of Ideas, Aristotle's later theory of Forms, the innumerable variations of the Platonic tradition which the subsequent history of thought contains—all these may or may not be of use in formulating a sound metaphysic. But in any case this comes to light: If a logician can indeed formulate any sound method at all, in any generally valid way, he can do so only because certain objects which he considers when he thinks, —be these objects definitions, classes, types, relations, propositions, inferences, numbers, or other 'principles,'—form a more or less orderly system, or group of systems, *whose constitution predetermines the methods that he must use when he thinks.** This system, or these systems, and their constitution, are in some sense more or less objective. That is: What constitutes order, and what makes orderly method possible, is not the product of the thinker's personal and private caprice. Nor can he 'by taking thought' wilfully alter the most essential facts and relations upon which his methods depend. If any orderly classification of a general class of objects is possible, then, however subjective the choice of one's principles of classification may be, there is *something* about the general nature of any such order and system of genera and of species,—something which is the same for all thinkers, and which outlasts private caprices and changing selections of objects and of modes of classification."

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* Italics mine.

And again Professor Royce says to the same point (p. 73), "Order is order. System is system. Amidst all the variations of systems and of orders, certain general types and characteristic relations can be traced. If, then, the methodologist attempts to conduct thinking processes in an orderly way, he inevitably depends upon finding in the objects about which he thinks those features, relations, orderly characters, upon which the very possibility of definite methods depends. Whatever one's metaphysic may be, one must therefore recognize that there is something objective about the order both of our thoughts and of the things concerning which we think; and one must admit that every successful methodologist depends upon grasping and following some of the traits of this orderly constitution of a realm that is certainly a realm of facts."

In all these quoted statements Professor Royce seems to accept very directly and unconditionally the *objectivity* not only of entities that are ideal and general and abstract, but also of those that are logical. Thus he opposes the dominant and traditional view that logic is "subjective," and is, in this sense, the "art of thinking," and that the "laws of thought" are laws of a psychical process.[4]

From the quotations given it would appear that *all logic*, including the traditional, narrow logic of classes and of the syllogism, is *objective*, and is only one of the several types of order.

There follows, in Professor Royce's essay, an exposition of some of the most important features of The New Logic, especially as this includes "Order-types." In these sections such subjects as Relations and their "logical properties," Classes, Series, the Correlation of Series, Functions, and, finally, "The Logical Genesis of the Types of Order," are presented in considerable detail, and the following interesting statements, bearing upon specific points, are made (p. 97): "Relations are of such importance as they are for the theory of order, mainly because, in certain cases, they are subject to exact laws which permit of a wide range of deductive inference. To some of these laws attention must be at once directed. They enable us to classify relations according to various *logical properties. Upon such properties of relations all deductive science depends. The doctrine of the Norms of deductive reasoning is simply the doctrine of these relational properties when they are viewed as lawful characteristics of relations which can guide us in making inferences, and thus Logic as the 'Normative Science' of the deductive inference is merely an incidental part of the Theory of Order."* Thus *the implicative relation,* the progressive discovery or guidance of which is identical with or accompanies our *correct reasoning* processes, is held to be objective. Reasoning, as defined in this manner, has its conditions. Did these conditions not subsist, there might still be a "world," and this "world" might be knowable, but we could not reason about it. For, says Professor Royce (p. 107), "Without objects conceived as unique individuals, we can have *no Classes.* Without classes we can, as we have seen, define *no Relations,* without relations we can have *no Order. But to be reasonable is to conceive of order-systems, real or ideal. Therefore, we have an absolute logical need to conceive of individual objects as the elements of our ideal order-systems."*

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[4] Cf. Chap. XIII.

With all this, excepting only a seemingly implied *dependence* of the individuality of "individuals" upon their *being conceived* as such, one can agree. But at this point, as in other places, Professor Royce seems to retract his earlier introductory assertions of the *objectivity* of the logical situation, and to color these now with an *idealistic* tinge. He introduces the thin edge of a wedge for his idealism even more noticeably, but quite as unnecessarily, in the statement (p. 108), that *"Apart from some classifying will, our world contains no classes." One may very well ask. then: How about the class of wills that classify? Is* *this, as a class of individual wills or will-acts that are related and so ordered in a certain way, itself dependent upon a classifying will?* And, if *not*, may not *other* classes, and the individuals, the relations, and the order, by virtue of which they subsist as classes, be equally *independent* of a classifying will, although related to it?

Professor Royce's "proof" or demonstration that Individual, Relation, and Class are "the Forms," or "Categories" that "characterize any realm of objects which a thinker has actually succeeded in mastering, or can possibly succeed in mastering," is contained in the Section on "The Logical Genesis of the Types of Order." His *proof* is the familiar one of finding certain propositions that are "presupposed by their own denial."[6] But in applying this test or criterion he again seems to pass from the earlier acknowledged *objectivity* of logical entities to a somewhat surreptitious introduction of an *idealism* that does away with this. Professor Royce's demonstration and the principle on the basis of which he makes it can be granted in the specific instance chosen. But one cannot allow either the *limitation* of the principle to this instance, or the *conclusions* which he draws from this specific demonstration. Some of the main points of his demonstration are as follows (p. 131):—

"(1) To any 'mode of action,' such as 'to sing' or 'singing' (expressed in English either by the infinitive or by the present participle of the verb) there corresponds a mode of action, which is the contradictory of the first, for example 'not to sing' or 'not singing.' Thus, in this realm, to every x there corresponds *one*, and essentially *only* one, $\bar{x}$."

"(2) Any pair of modes of action, such for instance as 'singing' and 'dancing,' have their 'logical product,' precisely as classes have a product, and their 'logical sum,' again, precisely as the classes possess a sum. Thus the 'mode of action' expressed by the phrase: 'To sing and to dance' is the logical product of the 'modes of action' 'to sing' and 'to dance.' The mode of action expressed by the phrase, 'Either to sing or to dance,' is the logical sum of 'to sing' and 'to dance.' These logical operations of addition and multiplication depend upon triadic relations of modes of action, precisely analogous to the triadic relation of classes. So then, to any x and y, in this realm, there correspond xy and $x + y$."

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[6] See Chap. XV., IV.

"(3) Between any two modes of action a certain dyadic, transitive and not totally non-symmetrical relation may either obtain or not obtain. This relation may be expressed by the verb 'implies.' It has precisely the same relational properties as the relation $-\!\!<$ of one class or proposition to another. Thus the mode of action expressed by the phrase, 'to sing *and* to dance,' *implies* the mode of action expressed by the phrase 'to sing.' In other words 'singing *and* dancing' implies 'singing.' "

"(4) There is a mode of action which may be symbolized by a *0*. This mode of action may be expressed in language by the phrase, 'to do nothing,' or 'doing nothing.' There is another mode of action which may be symbolized by 1. This is the mode of action expressed in language by the phrase 'to do something,' that is, to act positively in any way whatever which involves *'not doing nothing.'* The modes of action *0* and 1 are contradictories each of the other."

Professor Royce finds further (p. 134):—

"(1) That the members, elements, or 'modes of action' which constitute this logically necessary system Σ exist in sets both finite and infinite in number, and both in 'dense' series, in 'continuous' series, and in fact in all possible serial types."

"(2) That such systems as the whole number series, the series of the rational numbers, the real numbers, etc., consequently enter into the constitution of this system. The arithmetical continuum, for instance, is a part of the system Σ."[*]

"(3) That this system also includes in its complexities all the types of order which appear to be required by the at present recognized geometrical theories, projective and metrical."

In conclusion, Professor Royce arrives at a position which he calls Absolute Pragmatism, and which he holds "differs from that of the pragmatists now most in vogue." He says (p. 121), "There are *some* truths that are known to us *not* by virtue of the special successes which this or that hypothesis obtains in particular instances, but by virtue of the fact that *there are certain modes of activity, certain laws of the rational world,*

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[*] Cf. for (1) and (2) Chaps. XXI.-XXV. and XLIII., vii., viii., ix., x.

which we reinstate and verify, through the very act of attempting to presuppose that these modes of activity do not exist, or that these laws are not valid. Thus, whoever says that there are no classes whatever in his world, inevitably classifies. Whoever asserts that for him there are no real relations, and that, in particular, the logical relation between affirmation and denial does not exist, so that for him *yes* means the same as *no*,—on the one hand himself asserts and denies, and so makes the difference between *yes* and *no*, and, on the other hand, asserts the existence of a relational *sameness* even in denying the difference between *yes* and *no*."

"*In brief, whatever actions are such, whatever types of actions are such, whatever results of activity, whatever conceptual constructions are such, that the very act of getting rid of them, or of thinking them away, logically implies their presence, are known to us indeed both empirically and pragmatically; but they are also absolute. And any account which succeeds in telling what they are has absolute truth.*[1] *Such truth is a 'construction' or 'creation,' for activity determines its nature. It is 'found' for we observe it when we act.*"

With the general tenor of Professor Royce's essay I am in closest sympathy, and it is only to certain restrictions and conclusions that exception must be taken. One can accept even the specific instance which the application of "proof by denial" furnishes, namely, that the "modes of action," "to assert" and "to deny," are themselves *instances which conform to and presuppose the logic of classes, of relations, of logical products, and of series.* However, this is *not* proof for the idealistically tinged conclusion, that this logic is in some way created by "will," *e.g.*, by the "will to assert" and "to deny," or that individuals, classes, relations, order, and the like are in some way dependent on "will." This idealistic tendency is exhibited in the statement, previously quoted, that "Apart from some classifying will, our world contains no classes."

Modes of action such as those of willing, of affirming and denying,—and especially of *finding that denial presupposes the very thing denied*, may indeed present a specific *existential* case of entities that are individual, are similar, form classes with sub-classes, have logical products, and form series that are infinite, and, also, either discontinuous, dense, or continuous. *But this does not imply that any of these generic entities as such, or that any instance of them, such as, e.g., the real numbers, points, and physical objects, is created by "will," or dependent on it.*

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[1] Cf. the criticisms of systems opposed to realism all through Part II.

The ground for this assertion is the generally recognized principle, accepted by Professor Royce himself, that, if there is *one* "instance," it is always a permissible hypothesis that there are *others*. Perhaps, indeed, "instance" means or implies just this possibility. It follows, that, if there is *one* "instance," namely, *of acts of "will" which form classes, series,* etc., the possibilities cannot be denied (1) that there are *other* instances of these *generic* entities, *class, series,* etc., *and* (2) that these *generic* entities themselves also *are, i.e., have being*. However, if there are *these* possibilities, there are also the further ones, (3) not only that these *other* instances of individuals, classes, and series may be *independent* of that particular series which is identical with *acts of will,* but also (4) that the generic entities, *class, series,* and the like, may be similarly independent.[8] In fact, this *independence of "other instances"* is itself identical with that of *these generic* entities. But in any case, even with only the *possibility* implied, that there are *other* instances of *series* than the *will-series,* it is logically prohibited to infer the dependence, either of these *other* instances, or of the *generic* entities, *on the will-series itself. The opportunity for their independence is quite as good as for the opposite. Such an independence is quite compatible with a relatedness* of both the *specific* and the *generic* entities *to* will, *to* reasoning, or *to* knowing, and means the *objectivity* both of the generic logical entities, class, individual, series, *and* of all instances of these entities.

However not only can one thus find that this hypothesis of the *objectivity of logical entities and principles* is permissible, and that it is confirmed by empirical investigation,[9] but also one can show that Professor Royce himself really presents no obstacles to its acceptance as confirmed. For the very logical principles which our author himself elucidates and accepts, if they are applied to the specific situation under discussion, themselves demand this conclusion. This can be demonstrated as follows:—

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[8] Cf. Chap. XLIV.

[9] Cf. Chap. XXVI., II., 1.

Professor Royce makes a number of statements to the effect that "rational will," "modes of action," "reasoning," "the making of conceptual constructions," and "the getting rid of them," and the like, each "presupposes" or "logically" implies *that logic* which is identical with classes of individuals that stand in one or another, or in many, of several *relationships*, and that form one of the several kinds of *series*.

Although neither "presuppose" nor "imply" is defined by Professor Royce, each of these "entities" is by his own logic (at least) a relation. This is the case, first, because the *distinction* is made between the act of "rational activity" (the will to reason) *and that which this activity presupposes* or logically implies, namely, individuals, classes, and series. "Presupposer" and "presupposed" are, therefore, at least *two*. But, secondly, *a relation* is defined (p. 96) as "a character that an object possesses as a member of a collection (a pair, a triad, etc.), and that would not belong to that object, were it not such a member." We must conclude that, since "presupposer" and "presupposed" are two, they are *related*, and that "presuppose," or "imply," is the relation present between them.

The next important question is, Can that which is presupposed or implied be *related to*, and yet be *independent of* the "presupposer" or "implier"? And again Professor Royce gives us the materials for an answer. In his presentation of the several classes of relations as dyadic, triadic, symmetrical and non-symmetrical, transitive and intransitive,[10] he says (p. 99), "*Transitivity and symmetry are mutually independent relational characters.*" This independence is then *exhibited* by finding instances of the one character *without* the other. Thus the relation of "greater than," symbolized by $>$, is transitive, since, if $A > B$ and $B > C$, $A > C$; but it is totally non-symmetrical, since, if $A > B$, this precludes $B > A$. Likewise the relation "father of" (A is "father of" B) is also non-symmetrical, yet it is non-transitive, since, if A is father of B, and *B* is father of *C, A* is precluded from being father of *C:* the relation "father of" does not "go" from *A* to *C.* "Ancestor of" is, however, both non-symmetrical and transitive. Thus are *symmetry* and *transitivity* demonstrated to be, in Professor Royce's own words, *"independent* relational characters." But, in any case, by the principles previously stated, since these characters are *two, i.e., a pair,* they are *related.* Therefore it follows, in at least one case, that *relatedness and independence are quite consistent, and 'cosubsist.'* [11]

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[10] See Chap. XXVII.

Here again it must be said, that, if there is *one* instance of such compatibility, there may be *others,* and, further, that in *no* case does *relatedness merely of itself imply, necessitate, or carry with it, dependence; nor independence, non-relatedness.* Just such another instance, however, may be the important relation, just discussed, of "presupposition" or "implication." That which is presupposed or implied, namely, the *logic* of order, may be related to and yet be independent of that which presupposes (or implies) it, namely, that very rational activity which Professor Royce emphasizes so much.

With this the case, one certainly cannot justifiably assert that (p. 109) "our world contains classes" only because there is the will to classify. One cannot in this manner *logically* maintain a "synthetic union" of "creation" and "discovery."

However, in order to confirm empirically this hypothesis, that independence and relatedness are quite compatible, Professor Royce himself need only have found, if possible, *another* class and series of individuals that bear the same relation (that of being "reviewed") to *his own investigating* mind as do his *own rational modes of action.* He discovers among or in these last, quite as Descartes found that either to *deny* or to *assert* consciousness is to *presuppose* it, *a relation that generates a series.* Thus he finds that *to review a mode of action is itself a mode of action* that implies its own possible reviewal in another mode of action, and so on, in an infinite series. Further, *this series* is found to be generated by an *asymmetrical transitive* relation, and is either discontinuous, dense, or continuous.[12] However, each member of the series is, as Professor Royce himself admits

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[11] See Chap. XXVI., II., 1.

[12] Cf. Chap. XLIII., VII.-X.

(p. 153), "distinct," and sooner or later there is *that member of the series which discovers, or is identical with the discovery of, the serial character of the whole.* It is shown by the subsequent study of this series, that, if any specific member drop out, especially any so-called first or last member, the series is no less serial or ordered. The series is, therefore, *both related to, and yet independent of* any member that can thus "drop out." Thus that very serial character of the "modes of action," which Professor Royce, in order to support his Idealism, would show *is created by and depends* upon the "will to act," *is implied by his own logic to be independent of that individual act or member in which it is discovered. This is Realism.*

But further, that there are *other series* than the series of the modes of action called "reviewing," "noting," and the like, is also admitted, at least tacitly. For our author accepts and explains at some length the *correlation of series* and the functional relationship.[13] Then, at least, there must be series (at least two) to be correlated, say, by a one-one relation,[14] and *each* series is distinct from the other. But, though thus *related,* they are also in their distinctness, or bare "twoness," independent. For, if there must be at least *two* entities as the condition for a relation, then this relation cannot in turn generate or condition this *minimum of diversity.*

We thus reach, finally, an important conclusion of direct bearing on the problem of the character of the relationship between "knowing process" and "entity known," whether this be existential or subsistential, generic or specific, physical or mental. First, there *are other manifolds* than that of the series of rational will-acts. This is implied by the possibility of *series* being *correlated,* for correlation demands at least *two* series. But the manifold of will-acts is a series. Then there must *be other* series with which *this is in correlation.* Accordingly we must include (1) that other manifolds *are,* or *have being;* (2) that these other manifolds involve one, some, or all of the logical principles that the series of rational will-acts itself involves; (3) that, as "other than" and numerically distinct from *this* series, *these other series are both independent of and*

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[13] Cf. Chap. XLIII., VII.-X.

[14] See Chap. XXVII.

yet related to it, just as the series of one's own rational "modes of action" (*e.g.,* Professor Royce's) are both related to and independent of that specific mode which is the *act of discovery;* [15] and (4) that there is at least the possibility that *all* of these ordered manifolds should be related to, and yet be distinct from, not indentical with, and independent of one another.

This four-fold conclusion presents one of the most important parts of that modern logical doctrine which is called Logical Pluralism. It is the direct opposite of that tendency which Professor Royce supports, at least towards the close of his essay, namely, Logical Monism. These *two* positions together center on what is perhaps *the most important problem in philosophical methodology,* that, namely, of *the compatibility of independence and relatedness.*[16] The one answer to this problem, Logical Monism, has, whether it be true or false, conditioned *logically* the majority of the great orthodox philosophical systems down to the present. It is an answer that is itself conditioned historically and psychologically in the *Aristotelian tradition.* The other answer, Logical Pluralism, has also had its foreshadowings now and then throughout philosophical development, but its roots strike deepest into that fertile soil for logical research which is furnished by the relatively recent development of the empirical sciences, including mathematics. Only of late has this tradition and tendency come, as it were, to self-consciousness, and its logic been formulated. Professor Royce's essay forms a notable contribution to the formulation and emphasis of the importance of this new logic or "science of order," as it may be called. Indeed this long discussion of the essay has been undertaken because of its recognition of "the inexhaustible opportunities for future progress," both in philosophy and in science, through investigations in this new field. Not so much along the line of continuing to use the traditional logic as in philosophizing in accordance with the new logic, is there the possibility of philosophical advance in the future; not so much by studying substance and causation, mere classes, and the relations of exclusion and inclusion, will real problems be solved, as by examining the various types and the properties of relations and series (*as well as* mere classes), the correlations of series (*e.g.*, functions), and the nature of *implication* and *presupposition.* The one procedure would seem to have exhausted its possibilities: the other is full of promise.

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[15] See Chap. XXVI., II., 1.

[16] *Ibid.*

CHAPTER III

THE OLD AND THE NEW LOGIC

I. INTRODUCTORY

A SURVEY of the general situation in modern philosophy discloses three dominant features. One of these features is the ascendancy of the epistemological problem over all other problems. Thus from the time of Descartes (1596-1650), of Locke (1632-1704), and of Kant (1724-1804) to the present, there has been sought either *an absolutely certain basis* for (absolute) knowledge, or a knowledge of *how we know,* or both, *before* philosophers have gone ahead and known, as, in contrast, the scientists have gone ahead. *Secondly,* there has been the almost exclusive influence both of a method or *logic* and of a set of *fundamental premises,* often called necessary truths, that may be *grouped together* under the caption of *Aristotelian logic.* The third dominant feature is one of omission, but it is the correlative of the other two. Philosophers have proceeded largely *in ignorance of the actual practice of,* and, in many cases, of the *results obtained by the scientists,* who have increased human knowledge without prior investigation of the problem of knowing. *Thus, e.g.,* philosophy has largely been ignorant, until rather recently, of *a logic that is radically different from the Aristotelian.*

Now, as has been suggested in the preceding chapter, the demonstration that there is *one philosophical position which is presupposed by others,* and that this position is Realism, is obtained by examining the "knowing situation" in the light of the principles of this *new logic.* The general epistemological problem includes a number of more specific problems, such, *e.g.*, as those of the origin of knowing, the nature of truth and its tests, the limits of knowledge, and the like. But *whatever position is taken in the solution of these problems,* and whether this position be Skepticism, Individualism, Pragmatism, Naturalism, Positivism, Idealism, or Phenomenalism, it is presupposed that *the knowing process and the "state of affairs"*[1] *known and asserted in the position taken, are both independent and related.* This presupposition, however, is the very essence of Epistemological Realism. In other words, whoever asserts or advances as true a position that is *opposed* to Realism, of necessity takes a realistic position toward that very "state of affairs" which this opposed position describes. For, if one arrive at *any conclusion* at all in solution of the epistemological problem, then *some position is asserted,* as true in some sense, and *this position* is descriptive of that "state of affairs," regarding *the knowing situation,* which *includes the relation of knowing to the entities known,* whether these entities be simple or complex. But it is therewith presupposed, that, although this (true) "state of affairs" is *known* by him who asserts it as true, and is therefore *related* to this specific knowing, nevertheless it *is,* as a genuine "state of affairs," *not created, altered, or modified by virtue of this relation.* This, however, is a clear case of asserting and of presupposing, at least tacitly, that *relatedness and independence are, in one instance at least, quite compatible.* From this it follows, in this specific instance, that *one,* at least, of the *two* entities, knowing *and* entity known, could *be* without the other. But that this is the fact, is, again, one of the basic contentions of Realism.

This discovery of the compatibility of relatedness and independence in the instance of the knowing situation, and in other cases as well, has extremely important consequences. Indeed this compatibility is a *fundamental logical principle* that leads to the development both of more specific logical doctrines and of *a detailed Realism.*

One of the most important implications of the principle is,

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[1] E. L. Thorndike, *Elements of Psychology,* p. 71 *et passim,* also uses this phrase.

e.g., that it permits of *the validity of analysis*. For, *by it*, the "thing" analyzed, though related to the act of analysis, can be independent of this. But, if it is thus independent, then the analyzed entity is not created, altered, or modified by the analysis. This principle of the consistency of relatedness and independence that is itself discovered by analysis, *thus logically supports the validity of the very method of its own discovery*.

But, further, the principle implies that *those constituent parts* of which *analysis* discloses certain *wholes* to be made up, are to be accepted as entities that are not thereby created, but that are *discovered*. For, if entities can be *both* related *and* independent, then such constituent entities do not of necessity causally affect, modify, alter, or create one another. They can, therefore, either be removed experimentally without being changed, or, if an experimental removal is impossible, they, or at least certain classes of them, can be selected and *isolated* in the attention field, while others are ignored. This is *analysis in situ*[2]—a method that has been most productive, all through the history of modern science, of the discovery of the details of those complex entities that cannot be experimentally rent asunder. It is also a method of *virtual*[3] *elimination*, since, if one class of entities is independent, in the sense defined, of *another* class, then the *one can be studied as if the other were not present*.

In the results and methods of the more exact sciences, especially mathematics, and the new logic, which is largely the formulation of such methods, any number of instances of *relatedness and independence, of analysis in situ, and of virtual elimination are present*. These are found, *e.g.*, among functional relations, which subsist between variables; among absolutely simple entities, such as points and instants, both in the case of the relations of the individuals of each of these classes *among themselves and* to those of the *other* class; and among relations, such as 'cosubsisting' asymmetrical and transitive relations, as we found in the preceding chapter.[4]

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[2] *Analysis situs* is the term that is used in mathematics. But the phrase here used also has recognition; *e.g.*, see Cajori, *History of Mathematics*, p. 226. Cf. Russell, *Principles of Mathematics*, pp. 141, 466. It is here used with a broader meaning than it has in the technical *analysis situs*.

[3] Cf. the definition of "virtual" as "existing in effect, but not actually," given by Mach, *Science of Mechanics*, p. 49, in his footnote concerning The Principle of Virtual Velocities.

If, now, it were not possible to discover in a direct manner, that the knowing situation demands the compatibility of relatedness and independence *and* the possibility of an analysis which always leaves the knowing *in situ* in any situation where something is known, *this might be discovered by first forming our hypothesis in accordance with those principles that are recognized in the new logic. Conversely,* if *these principles* had not been already obtained from *other* sources, then the first suggestion of them as well as direct evidence for them could well come from an analysis of the knowing situation itself. Either order of procedure is thoroughly empirical, and the *outcome* in the two cases is the same. On the one hand it is, that the "state of affairs" in the "knowing situation" is one that demands, if no other instance does, those principles which are recognized in the new logic, while, on the other hand, it is, that for these principles there is one more opportunity for "application" in the particular instance of the knowing situation.

An analogous statement with reference to the traditional, old logic, especially those doctrines which concern the concepts of *substance* and of *cause,* meets, however, with a different fate. First, the result of the empirical study of the knowing situation directly invalidates at least the *universality* of these two concepts. For it is found that the knowing situation is one that makes it *impossible* for *the knowing* or the ego to be a substance, *or* to have a modifying, causal effect on the entity known, *on pain of the attempt genuinely to know defeating itself.* Or, secondly, if one endeavor, conversely, as it were, to *"apply"* these concepts of *substance* and *cause,* then they fail to account for the facts of the knowing situation, namely, that there is always *something* that is genuinely known. And yet it is just these traditional principles and concepts that have been applied, in one form or another, again and again, in the orthodox endeavors to solve the epistemological problem, until, with perhaps every variation tried and a philosophical *impasse* reached, one must seek success by a radically different procedure.

The necessity of thus adopting a new and radical point of

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[4] Pp. 21-22.

view may indeed be forced upon us even by the *mere manifoldness of systems* that result from the application of the traditional doctrines. But, even if this were not so, the discovery of the self-contradictory character of at least some of these systems, and of the *presupposition* by all of them of the principles of the new logic, would compel our recognition.

II. THE ORIGINS OF THE TRADITIONAL LOGIC

The modern view is that logic is an empirical science. One accepts various types of relations, of classes, of series, and of functions because one finds that there *are* these entities. One proceeds here much as he does in physics, chemistry, and biology, namely, by induction. In induction one generalizes from those cases that are regarded as *typical* and are taken at random. The inductive procedure, further, may be used either quite unconsciously and uncritically, as it often is, indeed, in common sense affairs, *or* with full knowledge and control of it as a method, as it is in science.

This *modern* view, although one not held by all logicians, as to what logic is, and as to what constitutes logic, results from the use of the general inductive method *as it is used in science,* namely, consciously. But the use of induction in the *historical* development of logic has *not* been of this kind. For, if we investigate the *beginnings* of logic among the Greeks, we find much evidence for the conclusion, that these founders of logic were *unconsciously dominated,* in respect to *the typical cases* which they selected for inductive examination, *by physical things.* However, that this should have been the case, is, perhaps, not surprising. For psychology shows that, out of all the variety of the realm of entities with which we are acquainted, *it is physical things that most extensively and intensively* attract the attention of both the individual and the nation that is immature. But both psychology and the history of human thought show, also, that *the physical thing,* when this thus becomes *the model for thinking,* is itself conceived of as *a complex of qualities that inhere in a substance-like substratum or core,* the *thing,* *i.e.,* the qualities and the substratum *together, being "particularized"* as *here* or *there* in space, and as *now* or *then* in time.

It is *the physical thing,* therefore, as defined in this way, that *was the model after which the Greek philosophers, though unconsciously, perhaps, patterned their thinking and formulated the "laws of thought,"*[5] *these laws being called logic.* Accordingly,

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[5] In the very nature of the case it is difficult to get *certain* evidence that Aristotle and his predecessors in Greek thought were predominantly influenced by the particular physical thing as the model after which they patterned their thinking, *i.e.*, both their logic and philosophy. For such an influence would, in the circumstances, be exercised without at least the full awareness, criticism, and consciousness of those whom it affected. Therefore we must not expect to find an explicit recognition and formulation of this influence in the philosophical writings of the Greeks, but we must, rather, look for such an influence "between the lines," and beneath the surface.

If, *e.g.*, Aristotle's *Metaphysics* is examined in this way, it will be found that, by and large, the whole work, and especially Book V., is couched in terms of *the particular thing.* That to which Aristotle directs his thought, and from which he derives the rest of his philosophy is *a concrete somewhat* (*τόδε τί*), *an individual thing.* This concrete somewhat is a subject (*ὑποκείμενον*) with qualities, quantities, and relations. These latter are the predicates of the former (*ὑποκείμενον*), while the former, the subject, does not stand in the relation of predicate to the latter or to anything else.

As examples of statements that confirm this whole view one finds in the Metaphysics the following definitions: Book V. (Δ), Chap. I., "'Beginning' means that from which *a thing* arises, *e.g.*, as the foundation of a house." Chap. IV., "'Nature' means the genesis of *growing things.*" Chap. V., "'The necessary' means that without which, as a condition, *a thing* cannot live, *e.g.*, breathing and food are necessary for an animal." Chap. VI., *b*, "*Things* are called one—because the *substratum* does not differ in kind." Chap. VIII., "'*Substance*' means the simple bodies, *i.e.*, the earth and fire and water and everything of the sort, and, in general, bodies and the things composed of them, both animals and divine beings and the parts of these. All these are called *substances* because they are not predicate of a subject, but everything else is a predicate of them."

In agreement with the view of the writer, that the particular physical thing was the point of departure for Aristotle, we have also the statement of Grote, *Aristotle*, 2nd ed., 1880, p. 97, that Aristotle "was, as far as we can see, original in taking as the point of departure for his theory the individual man, horse, or other perceivable object; in laying down this concrete particular with all its outfit of details, *as the type of* Ens *proper*, complete and primary; and in arranging into classes the various secondary modes of *Ens* according to their different relations to the primary type and the mode in which they contribute to make up its completeness." Also, *ibid.*, pp. 69 and 79.

A. W. Benn in his *Greek Philosophers*, 1914, and R. Adamson, in his *Development of Greek Philosophy*, 1908, also agree with my view. See the latter author, *op. cit.*, pp. 153-154 and 180-182. Also E. Cassirer, *Substanzbegriff und Funktionsbegriff*, 1910, Chap. IV., v., concurs in my views, not only as to the origin, but also as to the character of the Aristotelian tradition.

On the Aristotelian tradition see de Wulf, *History of Mediæval Philosophy*, 1900, trans. by Coffee, and *Scholasticism, Old and New;* H. O. Taylor, *The Classical Heritage of the Middle Ages*, and *The Mediæval Mind;* and Adams, *Civilization during the Middle Ages*, Cambridge Mediæval History. A good systematic account of t[illegible] general character of this development in its divergencies, with names, [illegible]es, bibliographies, it is not surprising that not only in the logic and thinking of these Greek philosophers, but also in the whole long tradition which has developed from them, one should find philosophy to be *dominated* by the "*thing*-concept," *and by those further concepts that are derivable from this,* namely, the concepts of *substance* and of *cause.*[6]

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etc., will be found in F. H. Thilly's *History of Philosophy,* 1914, pp. 120-227 Cf. with this, Boutroux, *Historical Studies in Philosophy,* trans. by F. Rothwell, pp. 74-169, especially pp. 156-162. For the continuation of the tradition in modern philosophy see *The Life of René Descartes,* by E. S Haldane, 1905.

Evidence that the concrete particular thing was the model for *earlier* thinkers as well as for Aristotle, is found in Plato in the *Cratylus,* the *Heraclitus,* the *Phædo,* and the *Parmenides.* Plato's logic is presented in the *Cratylus,* the *Phædo,* and the *Theætetus.*

[6] As illustrating the character of the *tradition,* and also as confirmatory of my main hypothesis, I may quote a modern scholastic, P. Coffee, *Ontology,* pp. 216-217.

"First, as regards our knowledge of the *existence* of substances, and the manner in which we obtain our concept of substance. We get this concept from corporeal substances, and afterwards apply it to spiritual substances; so that our knowledge of the former is 'immediate' only in the relative sense of being prior to the latter, not in the sense that it is a direct intuition of the natures of corporeal substances. We have no such direct insight into their natures. But our concept of them as actually existing is also immediate in the sense that *at first* we *spontaneously* conceive *every* object which comes before our consciousness as *something existing in itself.* The child apprehends each separate stimulant of its sense perception—resistance, color, sound, etc.,—as a 'this' or a 'that,' *i.e.,* as a separate stimulant in itself; in other words, it apprehends all realities as substances: not, of course, that the child has yet any reflective knowledge of what a substance is, but unknowingly it applies to all realities at first the concept which it undoubtedly possesses of 'something existing in itself.' It likewise apprehends each such reality as 'one' or 'undivided in itself,' and as 'distinct from other things.' Such is the child's immediate, direct, and implicit idea of substance. But if we are to believe Hume, what is true of the child remains true of the man: for the latter, too, 'every perception is a substance, and every distinct part of a perception a distinct substance.' Nothing, however, could be more manifestly at variance with the facts. For as reason is developed and reflective analysis proceeds, the child most undoubtedly realizes that not everything that falls within its experience has the character of 'a something existing in itself and distinct from other things.' 'Walking,' 'talking,' and 'actions' generally, it apprehends as realities,—as realities which, however, do *not* 'exist in themselves,' but in other beings, in the beings that 'walk' and 'talk' and 'act.' And these latter beings it still apprehends as 'existing in themselves,' and as thus differing from the former, which 'exist not in themselves but in other things.' Thus the child comes into possession of the notion of 'accident,' and of the further notion of 'substance' as something which not only exists in itself (*οὐσία, ens in se subsistens*) but which is also a support or subject of accidents (*ὑποκείμενον, substans, substare*). Nor, indeed, need the child's reason be very highly developed in order to realize that if experience furnishes it with 'beings that do not exist in themselves'; that if

Such is the conclusion to which the study of the history of philosophy brings us, as is shown by the fact that the dominant concepts in philosophy throughout the middle ages and, indeed, in the greater part of modern philosophy, *e.g.*, in the systems of Descartes, Spinoza, Berkeley, Kant, and Hegel, have been: (1) *substance,* in the sense of a *substratum* in which (2) *qualities seem to inhere*[7]*—as* in a physical thing; (3) *causation,* in the sense in which one physical thing seems to affect another physical thing, namely, by producing an effect which is a new quality that inheres in the substance of the thing affected; (4) the relations of *similarity* and *dissimilarity,* by virtue of which "things" form *classes;* (5) the fact of class and the relation of *inclusion* by virtue of which an individual "thing" is included in a class, *or one class is included in another class,*[8] *completely, partially,* or *negatively;* (6) and finally, the *additive relation by virtue of which,* whether it exists alone or together with similarity, *parts form a whole that is not ordered or serial in character, and* that has only *the same characteristics that the parts have.*

That philosophy and even science, somewhat, should have been *dominated* by these concepts, is, however, readily understood, if one inquires, What would most probably be *the derivative concepts if the particular physical thing* were unconsciously made the *model* not only *for the formulation of logic* but for "actual" thinking and reasoning? Would it not then have seemed to the

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'accidents' exist at all, it would be unintelligible and self-contradictory to deny the existence of 'substances.'

"Hence, *in the order of our experience the first,* implicit notion of substance is that of 'something existing in itself' (*όυσία*); the first *explicit* notion of it, however, is that by which it is apprehended as 'a subject or support of accidents' (*ὑποκείμενον, substare, substantia*); then by reflection we go back to the *explicit* notion of it as 'something existing in itself.' In the *real* or *ontological* order the perfection of 'existing in itself' is manifestly more fundamental than that of 'supporting accidents.'"

[7] Aristotle distinguished four causes. Thus he says: "The same thing may have all the kinds of causes, *e.g.*, the moving cause of a house is the art or the builder, the final cause is the function it fulfils, the matter is earth and stones, and the form is the definitory formula."—*Metaphysics,* translated by W. D. Ross, Bk. III., Chap. II., p. 996b. These four causes are usually called the efficient, the final, the material, and the formal, respectively. They are in turn "reduced" to two, the material and the formal.

[8] Aristotle's doctrine of the syllogism, contained in the *Prior Analytics,* the *Posterior Analytics,* and the *Topics.*

uncritical mind, even as it does today, that *a thing* is *not the mere aggregate* of its qualities, but that it includes a *substratum* in which these attributes inhere? For, *if there are qualities,* are they not qualities *of something,* and so *dependent?* And do they not, therefore, imply something that, ultimately, is *not* dependent on anything else, *on pain* of this again being a quality and so in turn demanding a substratum? With this the case, would it be surprising if, further, the concept of a substance-like unitary ego[9] had resulted from "thinking" a human being *after the analogy of a physical thing,* with only the difference that *the substratum here is regarded as spiritual* instead of as "material"? And would it be a step far removed from this also to conceive *of the manifold parts of the universe* as inhering in *one* universal substratum, be this spiritual or material or even "unknowable"? To these inquiries the history of philosophy gives innumerable affirmative answers in, *e.g.*, the doctrines of *rational psychology* and the modern ontological monistic systems of materialism and spiritualism.

Substance is merely independence

Spinoza

But further, with the physical thing made, unconsciously, perhaps, the *model* for thinking, would it not also seem to the uncritical and naïve mind that *things would affect one another,* so as to produce *either modifications in old qualities, or quite new ones,* yet in both cases without prejudice to the *self-identity* of the substance-like substratum that is the "core" of each? *And* also, if *all* the entities of the universe were conceived of as "things" of this kind, and so in *causal interaction,* would not each "thing," in respect to its qualities, be *infinitely complex* by virtue of being affected by everything else? Indeed, would not each complex of qualities *depend on all other "things"* to a greater or less degree, so that the universe would be like an organism? And finally, would not the soul, or the knowing ego, or whatever it may be called, be in *interaction* with other "things," both material and spiritual, *so as both to affect and*

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[9] The Platonic doctrine of the unity of the soul, presented in the *Phædo,* the *Theætetus,* and the *Parmenides* is an excellent example of the transference, to the human personality, of the model of the concrete particular thing defined as a unitary substratum with a manifold of qualities.

Further references: C. M. Bakewell, *Source Book in Ancient Philosophy,* 1909; Burnett, *Greek Philosophy,* Part I., Thales to Plato; Gomperz, *Greek Thinkers,* trans. by G. G. Berry, 1912; Lutoslawski, *The Origin and Growth of Plato's Logic,* 1905.

be affected by them? Then would not the *very act of knowing,* as the act of a thing-like-ego, *causally affect the object* (*to be*) *known,* with the result that *all genuine knowing would be rendered impossible?*[10]

Again do our inquiries receive affirmative answer in some of the great systems of philosophical history. Thus there is *phenomenalism,* holding that things-in-themselves *are unknowable,* and not merely unknown, because the "structure" of the knowing ego in its *inherent* qualities affects the "thing" known, thus to *condition* the character of all that filters through. Thus *it conditions the world* that we live in as the *only world that we know.* Of necessity it follows from this that, *were* knowing eliminable, it could not be removed without altering "things" *as* we know them. But there are also *panzoism,* maintaining that the universe is a living being and has a soul, and *anti-intellectualism,* holding that genuine intellectual analysis is impossible, both because each thing is infinitely complex and because the removal of a part alters its causal context.[11]

Finally, we may complete our inquiries by asking: *If* the physical thing is the *model after which* the naïve mind strongly tends both *to conceive the entities that it thinks about and also to formulate its logic, then what kind of a logic will this be?* Will it not be one that rests on the *most patent relations* among *"things,"* in addition to that of causation? And are not these the relations of similarity and of difference, *and* of mere "togetherness" or additiveness?

But *"things"* in that they are merely *additively related* form only a plurality or manifold or collection that is quite *independent of order,* while. as both similar and dissimilar, they form *distinct classes.* Patterned on the physical thing as a model, *logic* thus becomes essentially *a system of classes* that are either *included in or excluded from* each other, partially or completely. But, if this is the logic of the naïve mind, Greek or other, then, with a tradition based upon it, would there not develop philosophies which, because of *the lack of the proper methods of analysis,* become involved in unsuccessful struggles to solve such problems as those of *infinity* and *continuity,* calling the results of these vain attempts "antinomies,"[12] as Kant does? Would there not also be systems which, because they insist that parts can be *only additively related* to form a whole, can conceive of *nothing new appearing in this world-process?* Would they not *thus* be forced to deny all genuine evolution? And finally, would there not be systems that would be conspicuous for their ignorance of *those* entities and relations which science discovers, such as (1) *limits,* (2) relations that generate *series* and *correlations between these* (some of which are called *functions*), and, lastly, many other *wholes that have properties which are very different from those of their parts?*

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[10] Kant's phenomenalistic position: see Chap. XXIX.

[11] See Chap. XXXIII.

Historical inquiry shows that nearly all of the great philosophical systems, especially those of the last three hundred years, have one or more of the characteristics above mentioned. Yet that this should be the case is not surprising to him who looks sufficiently beneath the surface to discover the influences that have determined both problems and methods and solutions. One may conclude, indeed, that throughout its entire history philosophy has been *for the most part "thingized,"* if the term is allowable. *The one great postulate* from which deductions as to both problems and methods and solutions have been made, is, that entities are *"things"* which (1) consist of a *substance-like substratum* in which *qualities inhere,* and (2) are related *causally, additively,* and by *similarity* and *difference.*

III. THE FORMULATION AND THE CRITICISM OF THE TRADITIONAL LOGIC

At the present time, however, in both philosophical and scientific circles there is a fairly general recognition of the necessity of some criticism of the Aristotelian traditional logic and of what it has produced. This criticism, however, is participated in by two schools. The one, attempting to criticize, is nevertheless, with the irony of fate, *itself caught up in the onward sweep of* the tradition. Even now it can discern no other methods and concepts for intellect to use than the Aristotelian. And since it discovers that, *with these,* intellect *fails* to solve certain problems, this school takes refuge in a philosophy of emotionalism, of intuition, and of direct experience. A much discussed representative of this anti-intellectualism, emotionalism, and pragmatism, is the French philosopher, Bergson. In criticism of this school it is perhaps but fair to admit that it is guilty only of an unconscious ignoring of those *other* methods and principles to which intellect may turn if it does not succeed by the use of the Aristotelian methods and principles.

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[12] See Chaps. XXIII., XXIV., and XXIX.

The other school of criticism frankly recognizes these other methods and principles, and, in the knowledge and use of them, not only discovers the reason for the failures of the past, but also solves problems and gains the promise of future advance. Those who thus criticize are, many of them, scientists, but, mostly, philosophers who keep their weather-eye on the methods, the results, and the logic of modern analysis.

It is in the light of these methods and results that it is possible to *reformulate,* in terms of logical theory, *the major postulates* of the great historical systems of philosophy. The new logic, *especially* through its principle of the *consistency of relatedness and independence,* and its *denial of universal causation, itself logically justifies* the presentation of the "comparative anatomy" of systems *independently of their historical environment and causes.* Even the Aristotelian logic in its several aspects receives reformulation and proper placing in a broader realm.

Thus the Aristotelian doctrine of the syllogism is found to be but *a special instance* of the "science of order." An ordered series is generated by some asymmetrical and transitive relation, such as "precedes" or "less than" or "ancestor of," and the relationship of inclusion is only *one* of a number of such specific relations. Any asymmetrical transitive relation, *e.g.,* "less than," supposing it to be symbolized by the sign $<$, *is of such a character, that, if* $x < y$, and $y < z$, *then* $x < z$. Substituting for these variables the less general ones of three *classes,* standing as *subject,* or *minor term, predicate,* or *major term, and middle term,* and symbolized by S, P, and M, respectively, we have, *if* $S < M$, and $M < P$, *then* $S < P$; *i.e.,* the conclusion $S < P$ is "mediated" by a middle term, and in this conclusion this term "falls out." This is all illustrated by the syllogism, *that* (1) *if* knowing is an entity, *and* all entities are causes, then (2) knowing is a cause.

But more important for our purposes is the restatement and *logical* formulation of the traditional Aristotelian doctrine of *substance* and of *cause*. This doctrine is now called the theory of "internal relations," and, in accordance with what has been said of the dominant influence of the Aristotelian tradition, it is evident that *it* is that theory which conditions logically most systems of philosophy. The theory may be formulated in two ways, according as emphasis is placed on one or the other of the two doctrines that are involved in it.

The one formulation is, that *terms, by virtue of being related, causally affect one another and are complex, indeed infinitely so;* or, merely, that *related terms are infinitely complex.*[13] However, this second statement is not so satisfactory as the first, since it leaves the reason for the complexity unassigned. This reason is, that terms are initially conceived of after the analogy of interacting physical things. Then it follows that they are infinitely complex *not only* because of the causal effect on them of the infinite number of other "things" to which they are related, *but also* because the effects thereby produced *in turn affect or causally modify one another,* since *they* are related. Phenomenalism, Subjective Idealism, Naturalism, Pragmatism, and Anti-Intellectualism are systems that are logically derivable from the *postulation of this theory for one situation or another,* but especially in *interpretation* of the specific relational complex, "knowing" *and* "object known."

A symbolism that may be used advantageously to express *this* theory of internal relations in brief form is:—

$$\overrightarrow{\underleftarrow{xRy}} \quad \text{or} \quad x^{y\text{ etc.}}\ R\ y^{x\text{ etc.}}$$

The former symbolism is preferable, since it is the simpler. R symbolizes the relation, x and y the related terms, and the arrow *that causal action of each term on the other, by virtue of which each becomes infinitely complex.* This specific theory of relations may be called the "*modification theory.*"

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[13] B. Russell, "The Basis of Realism," *Jour. of Phil., Psych., and Scientific Methods,* 1911, Vol. VIII., p. 158; also see the references in Chap. XXVI.

The other formulation of the theory of internal relations is the proposition, that *the relatedness of two terms demands another, third entity, of a different order of reality, to mediate the relationship, i.e., to make the relation "really" relate.* This may be called the "underlying," or the "transcendent reality" theory. This theory is derived, consciously or unconsciously, from the analogy of the supposed holding together of the *several related attributes of a physical thing by the substance-like substratum in which they inhere,* and of which they are attributes. It receives an advantageous, brief formulation in the symbolism $\underbrace{x\ R\ y}_{U}$, the meaning of which is evident. X, y, and R symbolize respectively the two related *terms* and the *relation,* and U the *numerically single, metaphysical reality* that mediates this. Objective Idealism is an example of a system that is *logically* derivable from the postulation of this theory as applied to *all* entities, *i.e.,* to the universe.[14]

The logical arguments for both of these aspects of the theory of internal relations will be given in a later chapter.[15]

In direct opposition to this twofold theory of internal relations stands the *theory of external relations.* A convenient symbolism for this is $x|R|y$, or merely xRy. By this it is intended to express (1) the fact of the *mere relatedness* of the terms by virtue of the relation; (2) the *absence of any causal action* of either term on the other; (3) *the absence of any complexity* as produced by causal action; (4) the possible absolute, *numerical simplicity* of either term; (5) the absence of any entity to *mediate* the relationship, or to *relate* the relation to the terms; (6) the *independence* of the terms side by side with *the fact of their relatedness.*

The central question for which *each* of these theories of relations is asserted by its advocates to be an answer, is, *How does a relation relate?* The answer of one party is, that a relation relates by carrying with it, or by transmitting, *a causal effect* from one entity to another; of another party it is, that a relation relates through the agency of another, a third and *underlying* entity. Each of these answers is conditioned, at least psychologically, by the influence of the *physical* thing as the model for all thinking. The answer of a third party is that a relation just relates, with no causal effect, no dependence, no "underlying entity."

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[14] Chaps. XXXIV.-XXXVIII.

[15] Chap. XXVI.

For the third theory, that of external relations, direct and convincing evidence is found throughout a broad field of scientific, logical, and philosophical investigation.[16] A most important instance is the functional relationship—between variables, particularly in the case of "one-valued" functions, in which there is a one-one correspondence between two series. Each series is, of course, a manifold and a complex, but it is also *an ordered whole;* and, in the case of one-valued functions, each individual of the one series is related in a one-one manner to, or is in one-one correspondence with, one and *only* one specific individual of the other series. A simple illustration of such one-valued functions is presented in the case of the uniform motion of a body. Here the distance traveled is a function of the time required; *i.e.*, each point of the path or space-series is related in a one-one manner to one, and only one, specific instant of the time-series; *each of these correlations is, therefore, itself a complex,* but *its* constituent parts, namely, a point *and* an instant, are, *not complex, but simple;* they are, therefore, *both* related and independent, since *each* would be "the same entity," if it were *out* of the relation, that it is *in* the relation. *The motion itself is the series of these complexes, as these are related asymmetrically and transitively.*[17]

Another instance of one-valued functions is the relation between the uniform acceleration of a falling body, and the specific time-period required for this change. Acceleration is not motion, but it is *change of velocity.* It is, therefore, a series of velocities that are correlated with the instants of the specific time series of which it is the function. *Each specific velocity is a complex* that is correlated in a one-one manner with one and only one instant of this time-series, *and this correlation is in turn another complex.* But no individual velocity is complex

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[16] See G. A. Bliss, "The Function Concept and the Fundamental Notions of the Calculus," in *Monographs on Topics of Modern Mathematics,* ed. by J. W. A. Young; also A. N. Whitehead, *Introduction to Mathematics,* 1911, Chaps. I., II., V., and VI.

[17] See Chap. XLIII., x.

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by virtue of this particular one-one correlation, since, were there no accelerated motion, there could still be (motion of uniform) *velocity*. In other words, there could still be that complex, *point-correlated-with-instant*, which is the constituent term of uniform motion, even if there were not *that further correlation of this complex with an instant, which further relational complex is the constituent term of acceleration.*

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The brief analysis of these two examples shows that at least certain types of the functional relationship present a number of instances of entities, both simple and complex, that are *related externally*, as this term has been previously defined. Such instances are (1) an ordered series of points, and (2) of instants; (3) in the case of motion, the correlation of a point with an instant, and (4) the *ordered series of these complexes* as "forming" *motion*. Indeed it may be said, in general, of the functional complexes in their several aspects of simple and complex individuals that form series through asymmetrical and transitive relations, *and* of complexes that are formed by one-one relations, and the like, that *a consistent explanation of them is possible only on the basis of the theory of external relations.*

Further evidence for the theory of external relations from the fields of both science and logic will be presented in the later chapters of this volume. At this point, however, we may note the important fact, that, while philosophy has *remained* for the most part under the influence of the Aristotelian tradition, scientific development has been, from the time of Galileo (1564-1641), especially in the mathematical sciences, largely identical with the discovery of functional relationships and of what is involved in them. The expression of these relationships in brief formulæ is indeed the symbolic form that is taken by the majority of precise scientific laws. That which these laws express is, in a large number of instances, the correlation of variables, and this correlation *is* the functional relation.[18] Science at the present time distinguishes a number of different kinds of functions, and it is remotely possible that some of these do not allow of the "cosubsistence" of independence and relatedness. But the majority of them do, and indeed, in some such manner as our specific examples show. *The functional relation at any rate, therefore, involves* in a number of ways *relations that are external.*

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[18] Whitehead, *op. cit.;* Royce, Essay on "The Principles of Logic" in the *Encyclopedia of the Philosophical Sciences.*

For this reason, but also to employ a term which will perhaps be more familiar to the reader than "external relation," and which will suggest the sources of the evidence from which this theory is obtained, I shall frequently use "functional" as interchangeable with "external." This can be done advantageously except in cases where more precise distinctions are necessary. As concerns the relation between the two, it may be said that the theory of external relations is the formulation of *that consistency of independence and relatedness* of which the functional relationship is, in its several aspects, a most important example.

As *other* systems result *logically* from postulating one or the other aspect of the *theory of internal relations* for certain situations, so *Realism is that theory which is, in general, consistent with the theory of external relations,* particularly as "holding" for the knowing situation. But there is a radical difference in the two cases. In the one case there may be said to have been a genuine *application* that was *forced on philosophers by historical causes.* The systems that result are not only self-refuting, but lack empirical confirmation. In the other case, that of Realism, the specific theory of external relations is *found* to be applicable. In other words, the investigation of the *conditions* under which genuine knowing is alone possible discloses these to be of such a character as to *demand* the "external" or "functional" theory. They are shown to be but another instance of the generic theory of two entities being both related and independent. For example, Phenomenalism, Subjectivism, Naturalism and Pragmatism, and Objective Idealism, whatever else they may be, are asserted to be, if not explanatory, then at least descriptive of a "state of affairs" that is known, and that is true. Yet *the sole condition* on which, in each instance, *this specific knowing* can really be what it is at least tacitly assumed to be, namely, *genuine knowing,* is *that of the cosubsistent relatedness and independence of the knowing process and the state of affairs known.* But this condition, as a proposition, is precisely what these systems explicitly deny. Therein lies one aspect of their inconsistent and self-contradictory character.

time is "taken from" [illegible]. Would it make any [illegible]

What validates this logic? [illegible]

See p. [illegible]

Genuine knowing, and a cosubsistent relatedness and independence between the object known *and* the knowing, are *excluded, if* the knowing is in any sense a *substance* after the analogy of a physical thing. For, *if it is this,* then the knowing process *affects* the object, and is self-defeating. From this the conclusion is clear, that, if genuine knowing is to be accounted for, and if knowing is to be regarded as a typical conscious process, *one hypothesis* as to its nature, and that the great historical one, is to be *excluded. This hypothesis is, that knowing and consciousness are substances.* Whatever else these entities may be, they cannot be this. They may be specific relations, or specific events, one or both, or even specific *disembodied* qualities that do not inhere in any substance. All of these classes of entities are shown by modern logical analysis to be quite consistent; for *an event* is a *relational whole,* and one specific event is qualitatively different from others. All of these classes of entities allow also for a cosubsistent relatedness and independence.

But further, if the "substance view" is found impossible of acceptance in explanation of the nature of knowing and of consciousness in general, the suggestion lies near, that it must also be given up as a means of explaining *the physical thing.* This suggestion is confirmed by physical science. A physical thing is now regarded in physics, *not* as a substratum in which qualities inhere, but as a complex of mere qualities that are related in various specific ways. It is a whole that is the *non-additive* result of its constituent parts, these parts seeming to be identical with different *energy-forms.* But even *energy,* although it is conserved, is not a substratum-like substance. Rather, it is at once *a relational whole, a process,* and a specifically distinct qualitative constituent of the universe.

The "relational view of consciousness" is, then, that one which the writer finds himself compelled to support. Somewhat paradoxical though this view is in the light of *tradition,* and incomplete though it now is in many details, it is, nevertheless, that view which seems to be forced upon us by the logic of facts. It appears, however, as only one part of a much more extensive position that may be well called *the relational view of the universe,* and that stands in strong opposition to the *substance* and the *causal* views. This position may, however, receive other names. It may be called *Ontological Pluralism* from the fact that there are found any number of instances of entities, both simple and complex, that are related externally and functionally. No empirical evidence is discovered either for the *universality of causation*, or for *one substratum*, whether this be mind, matter, or an "unknowable." The position may also be called *Realism*, since, *among* the entities that are related *externally* to other entities, *are knowing and consciousness.* Objects known are neither modified nor created by the *act of knowing*, and no underlying reality is required to mediate the knowing. Finally the position may be called *The New Rationalism* to indicate that there are new methods of rational analysis which make it possible to solve problems where old methods fail. One is not justified in betaking himself to an anti-intellectualism and emotionalism on the ground that intellect fails, unless he has first granted to intellect the freedom to use all possible methods. Recent attacks on analysis[19] have ignored those new logical methods and principles that come from science, and have assigned to intellect *only* those methods that are imbedded in the Aristotelian tradition. Intellect, *if limited to these, does fail* to solve many problems. But such attacks on intellect can have only a seeming success, for there *are* other methods, as we have seen. These new methods lead both to *Logical Pluralism* and to *Realism*. For this reason the name *The New Rationalism* is perhaps the most suitable for a volume that is a defense and an exposition of a position the character of which is well indicated by any of the three titles suggested.

BIBLIOGRAPHY

For a discussion of the problems of philosophy and the types of philosophical thinking see J. G. Hibben, *The Problems of Philosophy;* Wm. James, *A Pluralistic Universe;* H. Höffding, *Problems of Philosophy;* A. Rey, *La Philosophie Moderne;* R. Eucken, *Main Currents of Modern Thought;* W. Windelband, *Philosophische Richtungen der Gegenwart.*

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[19] *E.g.* by Bergson in *Creative Evolution.*

SECTION II

THE HISTORICAL PROBLEMS OF PHILOSOPHY

CHAPTER IV

INTRODUCTORY

HAVING outlined, in some detail, the *point of view* and also *the departure from the more usual methods which that point of view represents,* we may now undertake the task of examining in further detail philosophical *problems, methods,* and *solutions of problems.* The problems of philosophy will be considered first, since so to proceed is to follow a certain natural order of relationship, whether this be logical, psychological, or historical, or all of these together. For it is clear, that, if there were no philosophical problems, there would be no occasion to apply *methods* of solution, even if these were ready at hand, and also, that, if there were no problems to be solved, there would be no *solutions.* To present, *first,* problems, then methods, and finally solutions, is, therefore, to follow a specific order of relationship between thé three main divisions of all philosophical thought and development.

However, in carrying out this program, the attempt will not be made to discover a *definition* of philosophy that will separate its problems from those of science, art, and religion. Rather, without any such definition, reliance will be placed upon the designation, both in the past and at present, of *certain problems as philosophical.* Thus to recognize the historical point of view is quite in agreement with the position, accepted in Chapter I., that, while history is not the only source of facts and of problems, it is nevertheless *one source,* and that although many of the historical problems of philosophy may be genuine, many also may be false. But problems that are false logically may *psychologically* be very serious and real, and should, therefore, in a general list of philosophical problems be included with those problems that are logically and factually genuine.

Although the problems of philosophy will, then, be presented in this very general sense, nevertheless they will be limited very largely to that philosophy which has appeared in European intellectual development. This limitation is made with the explicit recognition that very distinctive and interesting philosophies have developed in other civilizations, notably in those of India, of China, and perhaps of Japan.[1] Indeed, for these, especially for the first, much preëminence in both insight and liberality is claimed by their occasional occidental adherents. It may also be found that these philosophies are adapted to their environment as *beliefs to live by,* and that they are poetic in form and suggestive of realities which are mysterious and strange to the European mind; but, since it is also the fact that they have developed in a social environment from which there is absent much both of the knowledge of science and of the *logic that* is involved in science, we are relieved of the necessity of examining these systems in our present endeavor.

With our program thus limited, it is advantageous to remind ourselves of that environment in which the problems, the methods, and the systems of European philosophy have arisen. This environment consists of the realms of common sense, of conduct, of religion, of politics, of science, and of creative art and literature, each in a greater or lesser degree of development. Each of these realms influences the others and is influenced by them, and each contains certain elements which come to be recognized and formulated as *philosophical.* It is thus that philosophy arises and develops. Philosophy in turn is reabsorbed into each of these realms, to influence them, and again to help form a new environment, out of which, together with its own tradition, there develop new problems, new methods, and new solutions. However, of the parts played by these several realms in containing, in influencing and in being influenced by philosophy, it is the parts of religion and science that are most important. Each of these realms has furnished problems, methods, and solutions to philosophy, and each has, during certain periods of history, been the dominant motive and source for all philosophizing.

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[1] See, *e.g.*, P. Deussen, *The Philosophy of the Upanishads*, trans. by Geden, 1906; and Royce, *World and Individual,* Chaps. II. and IV.

Religion played this rôle, especially from the second and third centuries A.D., down to the seventeenth century, and has recurrently done so ever since.[2] But for the last four hundred years, while the problems that come from religion have not been excluded, it is *science* or at least the scientific impulse that has been the most active stimulus for philosophy.[3] Also in the period of the bloom of the Greek civilization it was the scientific and not the religious impulse that was in most intimate interaction with philosophy. Indeed it is important to note that in their beginnings in that period *both science and philosophy* arose from a common source, which was the conviction not only that *there is absolute truth,* but also that the attainment of truth is worth while both *for itself* and as a means to practical ends.

However, since at the present time it is not religion, nor art, nor common sense, but *science* that is most intimately related to philosophy and that furnishes it with most of its problems and also with its methods, it is interesting to note *how* this relationship has been *interpreted* in *certain specific historical instances.*

First we may note the historical fact, that many hypotheses, theories, and laws that now are scientific in the strict sense of this term, *e.g.,* the atomic theory, have had their origin in the tendency of men to reflect, to speculate, and to seek for *consistent* descriptions and explanations of the "things" that surround them. This specific relationship between science and philosophy, this origin of problems and solutions, is in large part identical with the development of thought among the Greeks, from its beginnings in the sixth century B.C. to its climax in Plato and Aristotle.

A second and more sophisticated view is, that philosophy is the queen that reigns over the sciences, possibly in all justice and kindness, yet nevertheless to say them "nay" and to say them "aye," prohibiting and permitting, and passing judgment on the validity of their efforts. In this relationship philosophy would assume for herself *the rôle of a science,* yet one in which she would be *not only distinct* from other sciences in respect both of subject-matter and of method, *but also supreme* over them. Her *own distinct method* would be that of *criticism; her subject-matter,* the methods and the results of the other sciences. Such an interpretation of the relationship between philosophy and science is the position of Kant and of the Kantian tradition, and persists even to the present.

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[2] Much philosophy has been and still is apologetics.

[3] *E.g.,* with Descartes, Locke, Spinoza, Comte, Spencer, Mill, Mach, Avenarius, the Neo-Realists, and probably with the Pragmatists.

Thirdly, and in distinction from the relationship just presented, it is also an historical fact, that, while to philosophy there has been assigned both a method and a subject-matter that are special, yet *to her the right and the possibility of criticizing has been denied.* By this view philosophy is a constructive science, *along with other sciences,* with her function neither that of destructive criticism nor of sitting in judgment over other sciences. This is a position of ancient lineage, since it is found among the Greeks. It also *precedes* Kant in the philosophy of Spinoza and of Leibniz, and follows Kant in Hegel and in the Hegelian school.

Fourthly, still another interpretation and development, both historical and recent, denies to philosophy not only all right to criticize, both also all specific problems and methods. In this view philosophy is held to be but the *sum total,* or, perhaps, the *organized and consistent unity of the whole group of the special sciences.* But the special sciences selected and emphasized are the group of so-called "natural sciences." Nothing is admitted to be *fact* except what is recognized by these sciences, and some sciences, such as mathematics, are denied their purity, and wholly identified with their *application* to natural "things." The whole realm of fact is thus held to be *included in, and exhausted by* Physics, Chemistry, Physiology, Biology, Astronomy, Psychology, and Sociology. This view has become especially prominent during the last hundred years, because of the great expansion of the natural sciences, and especially through the influence of such great empirical generalizations as Evolution and the Conservation of Energy. It is identical with Positivism and Naturalism, and is the position held by such philosophers as Comte, Spencer, and Ostwald, and by the majority of natural scientists. Pragmatism is in large part its latest phase.

Fifthly,—though perhaps this does not exhaust the list of possibilities—there is the tendency of interpretation which grants to philosophy *a special field of research,* but assigns to her *only those methods* that have appeared and been tested in the development of science. But in this case, as concerns results, much, if not all, depends upon the view that is taken as to what these scientific methods are. If these are selected as being limited to the formal principles of the Aristotelian logic and the concepts of *substance* and *cause,* as is more frequently the case than not, then *philosophical systems of a very limited type result.*[4] On the other hand, if recognition and use are made of the modern scientific methods of the "science of order" in its several branches of analysis *in situ,* and of discovering functional relations, series and their limits, and the various types of non-additive relations, and the like, then there result radically different, new, and satisfactory solutions of those *problems that are left for philosophical investigation only because the special sciences omit to consider them.* Aside from this, these problems are quite as scientific as they are philosophical, and whether they are referred to by the one name or the other is a matter of complete indifference. That philosophy which results from these liberal scientific methods as applied to the solution of specific problems, may be called Rationalism, or Intellectualism, or Neo-Realism.

The general question as to the character of the problems of philosophy in their relation to science may perhaps be still more sharply focused by the question: *Are the methods and the results of the individual sciences open to reinterpretation and transformation,* and, if so, to what extent and in what manner? This question is answered *positively* and definitely by the majority of philosophical systems, most notably by Phenomenalism, by Idealism, and by Naturalism.

As an excellent example of the *complete reïnterpretation and transformation* of the results of science, we may cite that philosophical position—of great influence in recent thought—which holds that *all the entities of the enormous quantitative and qualitative multiplicity and diversity of this universe,* are but the manifestation of, and are held together in relation and made *a universe* by, a numerically single, unitary spiritual being. Such a being is frequently identified with the Deity, while the philosophy which holds to its existence, assigning to it such "manifesting" and "uniting" functions, is variously called Pantheism, and Transcendental or Objective Idealism. SPINOZISM

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[4] See Part II., Section 1, for the systematic and logical derivation of such systems.

Another example of *reinterpretation* is the position which holds that *all* the entities of our immense and yet minutely detailed universe are, not the manifestations of a single universal entity, but the *partial creations* of finite knowing minds. This position is Phenomenalism. KANTIANISM

Still another position maintains, that *this creation is not partial, but complete,* so that the whole universe (of time) and of space, and of all other entities, is reinterpreted to be only *the sensations and ideas of finite knowing minds.* This position is Subjective Idealism. If this view be developed consistently, then clearly everything, both great and small, must finally be "brought within" *one* finite mind, as only *its* conscious states. This position is Solipsism. BERKLEISM

If, now, these positions are *illustrative* of *some* of the more important ways in which the results of the individual sciences are *reinterpreted and transformed,* it is of interest to contrast *this universe of the sciences* in respect to its immensities and minutenesses, its multiplicities and diversities, with *e.g., that numerical unity* to which these characteristics are reduced in some systems.

It does not in the least, however, lie within our province to endeavor to reproduce that account which the sciences give of the various aspects of this universe, but it suffices our purpose merely to mention some of the most conspicuous of these scientific facts. Thus, if we take the results of even one science, namely, Physics, we find that it reveals not only the most striking *contrasts* between the *minuteness* and the *immensity* of things, but also the almost inconceivable numerical manifoldness. For, on the one hand, Physics holds to the existence of minute entities, called electrons, that are of the *diameter* of 1/100,000th of that of an average molecule, and that move at the rate of 37,000 miles per second; on the other hand, there are other entities that are quite as surprisingly large, and that, nevertheless, are made up of such extremely minute parts. For example, as regards the spatial size of "things," there are stars or suns which are many hundreds of times as large as our sun (this being 864,000 miles in diameter) and from which light reaches us only in 100,000 "light-years," a light-year being the total distance that light travels in one year at the rate of 186,000 miles a second. If these "scientific facts" are suggestive of the greatness and smallness of things, one can get an inkling of the numerical multiplicity of the physical universe by first contrasting, *e.g.*, the size of a sun with that of an electron or even an atom, and then by realizing that these minutenesses are the *components* of those immensities.

But nothing has been said thus far of the *qualitative* diversity of things, in regard to which science is not less startling. It may be doubted, if any two individual entities are ever exactly similar, but, whether they are or not, *there are* kinds or classes, and the multiplicity of these is here again almost overpowering. Thus, *e.g.*, Biology recognizes that there are 500,000 different species of plants and animals, and Chemistry, that there are millions of qualitatively different *compound* substances.

These few examples must serve the purpose of suggesting, though most inadequately, *how very complex* and *manifold* this universe is. But they may suffice also to show *how very extensive* is the "material" that is to be *manifested by a single unitary being*, or *held together in relationship* or perhaps in an *organic unity by such a being*, or *created in whole or in part by finite minds, if the fact of such activities is the conclusion* that we accept as the result of our philosophizing, thus to maintain that *the entities of science must be transformed.*

However, whether it is one of these positions or some other that is the conclusion with which we issue, in any case, *the scientific account of things* forms, together with the religious, the political, the æsthetic, and the common-sense realms, that environment to which our philosophy must adapt itself as well as contribute its part, and of which it must be interpretative. But this is, indeed, *now* as it always has been, even when it was *not* science, but other influences that were paramount. For, from the time of the Greeks to the present philosophical problems have arisen because they have been presented by that varied and complex universe in which men have found themselves as reflecting beings.

CHAPTER V

THE ONTOLOGICAL PROBLEM

This problem is examined first because of a certain precedence over the other problems of philosophy. This precedence is in part historical, in part psychological, and in part methodological. Historically the ontological problem antedated the other problems of philosophy in the form of the question as to *what* is the fundamental "stuff" or "stuffs," the "material" or "materials," out of which other "things" are "made," or which play the rôle of *ultimate reality* to other "things" as *manifestations and appearances.* This is shown by the well-known answers which were given to the problem, *e.g.*, by Thales (624-548 B.C.), that *all was water,* by Anaximenes (about 588-534 B.C.), that all was air, and by Empedocles (495-435 B.C.), that there were *many* fundamental materials, namely, fire, water, earth, and air. *Quite analogous answers* to the problem are, however, offered at the present day in both those *monistic* philosophies which maintain either that *all things are ultimately psychical or spiritual,* or that they are all material, *and in those pluralistic systems* which hold that not one, but many irreducible "stuffs" are in the universe.

These answers indicate, however, that there are *other phases of the ontological problem* that strike deeper than does the problem as to what is the fundamental stuff, material, or *substance* of the universe. *Logically antecedent* to this problem are the questions (1) whether the universe is made up *of stuff or substance* at all, rather than of *events,* or *relations,* or even disembodied qualities, or *neutral* entities; and (2), if there is anything ultimate, whether it is *one* or *many?*

The ontological problem may have come first *historically* because of its *psychological* preëminence in the intellectual interest of the Greek race, and this priority it still possesses, since for many the bare question, *what "things" ultimately are,* quite outranks in interest the question, *what "things" do,* or *what happens.*

But to others the problem is of greatest interest because of the practical bearing on life which certain *specific solutions* of it are held to have. Thus, if investigation will only lead to this result, many a person attaches a peculiar *sanctity* to the conclusion, *e.g.,* that *all* "things" are ultimately psychical or spiritual,—a position which is identical with certain idealistic and theological doctrines. Indeed in this conclusion some find the *only* ground or justification for conducting their lives in accordance with certain ethical principles, especially those of optimism, whereas a debasement and a pessimism would be attached to the opposed conclusion, that all "things" are material.

The ontological problem thus becomes not only *prior* in interest, but also in *procedure* for many. The position is taken, that law and order in the universe, and especially purpose, and *a victory of good over evil,* can be *guaranteed only* if the universe has *a specific ontological character,*—namely, that ultimately it is *all mental* or *spiritual* in its *being.* Others, on the contrary, hold that the solution of the problem as to the *law* and *order* and *purpose* of the universe should *not in the least be made dependent* on the solution of the ontological problem. For, it is argued, if the universe *has* these characteristics, *then they are ineradicably there,* whether the further character of the universe be one of complete and exclusive spirituality, or of materiality, or of something else. Still others contend, that, while the ontological problem may be *first* historically, and also *psychologically—for some,*—it nevertheless cannot be the first to receive solution. The reason for this contention is the position, held very widely in the philosophy of at least the last hundred and fifty years, that *the solution of all other problems is dependent on the prior solution of the problem of knowing.* Thus, after this manner, *many a philosopher* maintains that, indeed, no other philosophical problem can be satisfactorily considered, much less solved, until a solution is found for the question, as to *what* is involved in the fact, that *all things which* *are known,* even an ultimate "stuff," *are in relation to a knowing process or mind.* It is evident that those who take this position regard, not the ontological, but the *epistemological* problem as *prior to all others,*—certainly as a matter of method, and perhaps, also, in respect to psychological interest.

However, at the present time, *not all* philosophers accept this much protested priority of the problem of knowing,—indeed not even as regards its psychological interest, and there is much evidence to confirm such a disavowal. For the very *outcome* of the study of the problem of knowing *may* be the conclusion (1) that the fact that knowing is related to every *known* "thing," *has no bearing* as to the *character* of what is known, so that, (2) "things" can be genuinely known without previously ascertaining *how, whence,* and *wherefore* we know them. Such an absence of the prior investigation of the epistemological problem has characterized the greater part of the development both of common sense and of science. Indeed, ever since the epistemological problem came to the fore in philosophy, especially with Kant (1724-1804), the larger part of scientific development and discovery has been the work of men who have ignored this problem, and who have contributed directly to the detailed solution of *other* problems.

For a number of reasons, therefore, the *ontological* problem is placed first in our list. It is a relatively simple problem to state, if not to solve, and it arises very naturally in our reflective thinking. It also came first historically. Stated *broadly,* however, in the form, Is *substance* ultimate, *or are relations and events and qualities?* and, How is the *less ultimate related to the more ultimate?* the ontological problem is part of a still more inclusive problem, namely, the problem of cosmology. Indeed, *within this last problem* there also falls *the problem of knowing, or of knowledge,* since it may be asked, whether it is not alone within a *law-abiding* universe, a cosmos, that *knowing has its "place,"* its *function,* and *its specific relations to other entities.*[1]

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[1] See Chap. XLIV. I.

CHAPTER VI

THE COSMOLOGICAL PROBLEM

BRIEFLY, this problem may be said to concern the question of the order, the laws, and the organization of the universe. It is the problem of Cosmos *versus* Chaos. More specifically it is the question as to whether law and order, *e.g.*, classes, series, correlated series, and the like, are present among, or absent from the universe, and, in the former case, *what the character and source* of this law and order is.

Clearly, however, the logically prior problem here is whether law and order are *present in or absent from* the universe, *i.e.*, whether the universe is a cosmos at all. For, if there were no law and order, then it is clear that there would be no further problems as to their character and source. According, of course, to the prevailing scientific point of view, this prior problem seems quite artificial, but it is, nevertheless, regarded as a *genuine* problem by at least one contemporaneous philosophical school. Thus the pragmatists and the modern humanists, the romanticists, and some of the mystics, frankly contend, that all that there is of law and order is what human beings "read into," or *impose upon* a universe that is of itself *chaotic, capricious, lawless, and orderless.*[1] However, whether *those very conditions* that, on the one hand, *permit of,* and, on the other hand, *lead to,* such an accession and imposition, are not *themselves identical with law and order and cosmos,* is a question that is *not* considered by the philosophers of this school.

Opposed to this there is the position, which is much more frequently taken, that law and order are *"resident"* in "things," and thus *present to be discovered,* whether by methods difficult or easy, and notwithstanding that error may precede success. Differing but slightly from this there is also the position, that the *source* of all law and order is a single, infinite spiritual Being, God, who is either the *one substance* of the universe, or its *creator*, or its *architect*, or at least its *legislator*. Each of these subordinate positions is taken as a result of the endeavor to solve *minor cosmological problems*, or groups of problems.

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[1] *E.g.*, James, *Some Problems of Philosophy*, Chaps. X., XIII.; and Schiller, *Studies in Humanism*, 1907.

The *general* cosmological problem is, however, the *most inclusive* of all the philosophical problems. Thus, if there *are ultimate entities*, one or many, that *manifest* themselves in other things as *appearances*, there is the problem as to the *relations* between and among these entities, both manifesting and manifested, both realities and appearances. The cosmological problem thus includes the ontological. But it also includes the teleological, the theological, the epistemological, the valuational, and the psychological problems. For such questions as those (1) as to the absence or presence of *purpose* in the universe, (2) of the fact and character of the Deity, (3) of the relation of knowing to that which is known, (4) of the fact and character of values and worths, and (5) of the nature and function of consciousness, are each directed to some specific problem concerning one or more aspects of a universe that is a *cosmos*. A good part of philosophy and science is to be regarded, therefore, as aiming to solve the detailed problems of cosmology.

But there are also cosmological problems of more general character than these last. Thus there is the problem as to whether, by any possibility, the many laws of the universe (assuming that there are laws in some sense) may not be merely *specific instances of one fundamental law*, so that, side by side with an apparent pluralism, there is a fundamental *logical monism*. There is also the similar question as to whether there is one fundamental law that *applies* to all entities. To this there is, *e.g.*, the affirmative answer, that *causation* is such a law, and that *all*, indeed *quite* all the entities of the universe causally affect one another, so that the universe is like, or, indeed, *is an organism*.[2] *Or*, is the universe patterned after the model of a classification of plants and animals,[3] with differences yet with similarities, so that finally an *all-denoting class-concept* is reached that denotes everything, even as "living being" is the generic class for all plants and animals. And what *is* such an ultimate *summum genus,* if it exists? Is it "*existential entity,*" with the physical and the mental as *species,* or is it mere "*entity,*" or "being," or "subsistent," with "existent" and "non-existent" (such as, *e.g.*, a perpetual motion machine) as species?

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[2] *E.g.*, in the philosophy of Fechner (1801-87) and of Paulsen (1846-1908).

[3] Aristotle, and, with certain limitations, Plato, and Spinoza.

Or, again, if the universe is *not organized* either in this way or as an organic whole, do its various basic laws form *a complete mutually implicative system, or,* are they merely *consistent* with one another,[4] after the model of the postulates (axioms) of geometry? Or, finally, is the universe *stratified,* after a rough analogy with the layers of rock in the earth, so that there are certain entities, called *logically subsequent,* that are dependent on others that are *logically prior,* but with the latter independent of the former? If this is the case, then would not *each* later "layer," as being *something more than all the preceding ones,* possess the positive freedom of following the law or laws of its own positive peculiarities? For example, would not life be "free unto itself," yet law-abiding at that level where life first exists? And would not a free will be the law of morality in that "stratum" where morality alone occurs, namely, *where conscious beings first form a society?*[5]

Each of these views can be found somewhere in contemporaneous philosophical literature,—a fact which indicates that, taken broadly in a psychological as well as in a logical sense, they constitute a list of solutions to *a set of problems* that concern the nature of the *cosmos.*

But there are still other specific and very important cosmological problems. One of these concerns the question as to the *types* to which the complex entities of the universe belong. For example, are there not groups of individuals in the universe that not only resemble one another, so as to form *classes,* but that also have an order and *form series,* after the manner of the positive integers in order of magnitude? Also, if there *are* series, are there not *relations between series* such that a particular individual of one series is correlated with one and only one of another series, after the manner of the correlation of a particular velocity (of a moving body) with one and only one particular instant of time? Another closely allied cosmological problem concerns the questions as to what entities in the universe are strictly *continuous* in the precise scientific sense of this term, and what ones are as strictly discontinuous. Are there, also, both infinities and finitenesses? Which of these, indeed, *is the universe itself* as a whole—in respect to, *e.g.*, its spatial and temporal characteristics?

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[4] The position of modern science. See Chap. XLI, VI.

[5] See Chaps. XLIII., V., and XLIV., II.

All of these are problems of cosmology that have for the most part long persisted in both philosophy and science. However, through recent investigations they have, in some instances at least, received a seemingly definitive answer, while the principles and the logic discovered and used in *their* solution go far toward solving *the other problems of cosmology.*[*]

CHAPTER VII

THE TELEOLOGICAL PROBLEM

STATED briefly, the teleological problem may be said to concern the question, whether or not there is *purpose* in the universe as a whole, and, if so, in what sense. It is clear, however, that *this problem* logically precedes the problem as to *what is the source and origin* of such purpose, since, if purpose were not in some sense *a fact*, there could exist no question *about* its origin or source.

However, for psychological reasons, these two problems are frequently confused and their order reversed. *The fact of purpose* in at least some sense undoubtedly becomes first known in the realm of our own human desires, ideals, and deeds. Although the analysis that is made of it in this sphere varies somewhat, nevertheless, in general, purpose is held to involve (1) the desire or acceptance of something not yet a fact as (2) *worth* realizing in the future, and (3) the adoption of some means to attain this end. But with the idea of purpose thus once become present, its transfer to other realms is made with ease, so that it soon may be held to characterize even the uni-

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[*] See Chap. XLIII.

Royce on Process

verse itself as a whole. This specific transfer is accelerated, and the order of the two problems as to the *source* and *fact* of purpose is confused and reversed, if the *conclusion* has been previously derived, that the universe is a vast order and uniformity of "things," a realm of law and adaptation, and that all this demands an Orderer, a Lawgiver, even a Creator.[1] For from this conclusion there readily follows the *conviction,* that such a Being is also a Purposer, and that the Cosmos is one great system of *means* to the accomplishment of *ends.* Thus, *without prior and independent investigation* as to whether or not there *is* purpose in the universe as a whole, a positive answer to this problem is derived from one of the specific solutions of the *cosmological* problem, *i.e.,* from the *possibility* of there being purpose, the conclusion is drawn, that this purpose is *actual* in the realm of existing "things."

If, now, for some, the teleological problem receives a positive solution in this manner, it is clear that *the further character of the teleology* that is accepted will depend largely upon the character of the cosmology from which it is derived. For in each case here, Lawgiver, Source of law, Orderer, Purposer, on the one hand, *and universe,* on the other hand, are held to be in some sense *apart.*[2] Thus, as one possibility, the two may be regarded as *distinct* in the sense that, the universe having once been *made a Cosmos* of law and purpose, the Lawgiver and Purposer then withdrew, to leave His work alone ever afterward, and, indeed, perhaps quite unable subsequently to interfere. This position is Deism.[3] Or it may be held, that the Lawgiver and Purposer can interfere at any time, either to institute new instances of law and purpose, or to withdraw old ones, so that He is ever present and never remote. This view is one form of Theism.[4] Both Deism and Theism, in that they are positive solutions both of the cosmological and of the teleological problems, tend to accept a Being who is Himself *prior* in time to that Cosmos which He is held *to order,* perhaps even to create, but, at least, to use as a means to an end.

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[1] The Physico-theological argument.

[2] Cf. H. Höffding, *The Philosophy of Religion,* pp. 14-95.

[3] A product of modern scientific speculation as this developed into 18th century rationalism, and a position taken by a great many of the philosophers of that (18th) century. See Leslie Stephen, *History of English Thought in the 18th Century,* 2 vols.; J. G. Hibben, *The Philosophy of the Enlightenment.*

[4] The position taken by most orthodox Christians and one whose apologetics is found in the works of Kant, Berkeley, Leibniz, Descartes, Aquinas, and a host of others. Galileo, Newton, and Robert Boyle were theists.

Opposed to these there is also the position in which the Orderer and Purposer of the universe is regarded as The Ultimate Reality, who is *eternal* in the sense of being *timeless,* and who, as thus apart, *manifests* Himself in the universe of temporal and spatial things. This view is a modified Theism, which tends to become Pantheism.[6] It is held to account logically for an *immanent* as opposed to a *transcendent* or external teleology, which is the position of Deism and the first kind of Theism.

Deism, Theism, and Pantheism are all in agreement, however, in holding not only that there *is* order and law in the universe, but also that this establishes *the fact* both of purpose *and* a Purposer. They are in agreement also in holding that this Purposer is external to that to which purpose is given, at least as a means to an end, namely, the universe. The first two positions maintain this very clearly, but the third position, Pantheism, does so, also, since the *manifestations* of a Deity cannot be *identical with Himself as Manifestor,* but must be *numerically distinct* from *Him.*

However, it is quite evident, as has been said, that the teleology which each of these three positions accepts, is entirely subsequent to and dependent upon that specific solution of the cosmological problem which holds that order and law demand an Orderer. For, having once reached this last conclusion, it is easy to attribute purpose to this Being in analogy to the fact of purpose as we discover it in our own conduct.

But the situation becomes radically different, if the arguments for such an Orderer and Purposer are invalid, for we are then thrown back upon the bare question, Does *purpose* characterize the universe *quite by itself* and independent of any entity that is external to the universe? But through this question the teleological problem leads at once to the further problem as to whether there are *in the universe,* side by side *with* they are [illegible]

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[6] The position held by a large number of the great philosophers of history, notably Roger Bacon, Spinoza, Fechner, Schopenhauer, Hegel, Bradley, and perhaps Royce.

those entities which are non-values, such as the physical sciences deal with, *still other entities that are, in contrast, worths or values.*[6] Indeed, it may be asked, whether, if there *is* purpose, this does not itself presuppose these value-entities? For, does not purpose mean, *ends deliberated about, chosen among, and sought for,* because they are ultimately *worth while for themselves,* and not merely as means to an end? Are not such ultimate ends *worths?* Indeed, if some "things" are valuable as means, does not this imply still other "things" that are valuable as ends?

This question states the teleological problem in perhaps its most modern form, but in a way that is, indeed, almost as old as philosophy itself, since it is the very center around which the philosophy of Plato turns, and the answer usually given to it is affirmative. Just as, *e.g.*, there are the realms, or fields, of *motion* and of *spatial extension,* yet with the two *not identical,* so it is maintained, there are the two realms of *values or worths and of non-worths, with the two quite distinct* and different. And further, just as it is conceivable that the *laws* of motion are not of necessity "legislated" for moving things by an external agent, but are of "the very nature" of moving "things," so may values not come from without, but may themselves be *entities or facts* side by side with *other kinds of facts.* But also it may well be that, just as one and the same entity can be, *e.g.*, both spatially extended *and* moving, so also can an entity be *a value in one realm or relational field, and a non-value in another.* Indeed it may be asked if this is not exemplified by such an entity as a picture, which, as a thing of beauty, is in one relationship an ultimate æsthetic worth, but which is also a physico-chemical complex of oils and pigments, and as such a non-worth or physical fact.

However, whether or not one agrees with the positive answers that are given to these questions, they nevertheless indicate problems that strike to the very root of the teleological problem, while in solution of them one may be led to the position, in place of either Deism, Theism, or Pantheism, that there is in the universe an *efficient value- or worth-principle,* and that *this,* rather than the Orderer, Lawgiver, and Manifestor of traditional theology, is "the power, not ourselves, that makes for righteousness."[7]

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[6] The position of Kant, Fichte, Herbart, and, among recent writers, Münsterberg; see his *Eternal Values,* 1909.

Still other specific teleological problems concern the questions as to (1) *what the specific purpose* of the universe is, *if* it all has a purpose, and (2) whether or not there are entities that are *directly opposed to values, or goods, i.e.,* whether there is an *irreducible* and ultimate Bad in the universe,—something not merely non-value, but *positive* Evil. The first of these questions may indeed indicate the proper method of approach to the whole problem of purpose. For, might not the proposition, that there are both purpose *and* a Purposer, perhaps be best established by first ascertaining *what* the specific purpose of the universe is? Historically, the happiness, the well-being, and the salvation of mankind have each been regarded as the specific end "of all creation," but at the present time there is a reaction against such an anthropocentric point of view.

As regards the second question, concerning the reducibility of evil, the fact of at least three different solutions indicates as many specific subordinate problems. Thus it is asked, Is not the *ultimate* character of all things good, *so that evil is mere appearance?* The objective idealist answers "yes," since for him everything else is "absorbed" into One Being that *is* good. The evolutionist and pragmatist disagree with this solution, and maintain that evil is *relative* to good, and conversely, and that each is relative to the time and the circumstances, so that *neither is absolute.* In turn the realist disagrees with this, and advances the view that evil as such is ultimate and indestructible either by argument or by action, although the number of its concrete instances may be decreased by fighting them with good.

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[7] Höffding's position in the *Philosophy of Religion*, pp. 215-278.

Absolute [illegible]

it is relative [illegible]

[illegible]

CHAPTER VIII

THE THEOLOGICAL PROBLEM

THE teleological problem leads naturally to the theological problem. Let there be order, regularity, and uniformity in the universe; let there be an adaptation of one "thing" to another, *e.g.*, of the eye to light, of body-color to surrounding foliage, and the like, and the question at once arises, *Whence* this order and law, this uniformity, this adaptation? Do they not demand an Orderer, a Lawgiver, an Adapter, even as the watch implies a maker, the building an architect, the bridge an engineer? That they do, is the answer given by the Deist, the Theist, and the Pantheist, all of whom *infer* from the *observed* order and law and adaptation, the existence of a Being, God, who is their source. This argument for a Deity is called "the argument from design."[1] It is obvious, however, that it makes of the Deity only the designer, the architect, or the engineer of the universe, and *not* the creator of its matter and substance.

But further, the universe consists not alone of static, unchangeable, resting "things," if, indeed, there are any such "things" at all. Change, motion, and evolution are also facts, and indeed may be universal. Then the question arises, *Whence* comes this change, this motion, this possibly universal evolution? *Who* started all this process going, *endowing* it, at the same time, perhaps, with order and law, whereby to fulfil a purpose? For must it not have had a starter, an initiator? Is not one billiard ball moved by another, and the cue ball in turn moved by the arm of the billiardist? And does not food make the player's arm move, while rain and plowing and soil produce foodstuffs? And were not these happenings caused by *other*, earlier happenings, and these by still earlier ones, and so on indefinitely far back? Where shall the stop be made *or* does there seem to be *no* stop at all implied in this (infinite?) *series* of causes and effects?

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[1] An argument that is used by all who accept a positive teleology, whether this be immanent or transcendent, and whether it leads to deism, theism, or pantheism. Among those who use this argument are Aristotle, Augustine, Anselm in the Monologium, Thomas Aquinas, Berkeley, Leibniz, Fichte, Hegel, and Royce. See the latter's *Religious Aspects of Philosophy*, 1885; *The Concept of God*, 1897; *Studies of Good and Evil*, 1898; *The World and the Individual*, 2 vols., 1900, 1901, and *The Problem of Christianity*, 2 vols., 1913.

Two positions are taken in answer to this question, the one holding that there is an end, the other, *no* end to this series. The former is that solution which is accepted as the outcome of the so-called "cosmological argument" for the existence of God. There must be *a first cause,* this argument runs, that is *itself uncaused,* in order that it may be *adequate* to produce or cause the "world" as a whole. It must itself be uncaused, since, were it not, there would still be another cause "behind" it, and so on, so that the problem is repeated until at last there is reached *a first cause which is not in turn effect.* This cause is "first" in the sense that it is either *prior temporally* to all effects, *or prior metaphysically* in that it "underlies" and conditions *through all time* all other causes and effects. In both cases, however, *such a first cause* is identified with God.[2]

However, in addition to these several problems as to whether or not there is an architect and possibly a creator of the universe, or a Being who started all "things" going, or one who did this and who also continually maintains "things" in a certain order and to a certain purpose, there is the *further and related problem,* whether or not there is a *perfect Being,* who plays one or more of these rôles, and who is *complete* in His goodness, power, and insight.

There is no doubt that the view that there is such a Being, and that this Being is God, is a most widespread one. There is both the *idea* of a perfect Being, *and* the belief in His *existence,* or His reality. Yet in criticism of this *belief* it may be asked, if we do not have *many* ideas to which there corresponds no existent object. My *idea* of a perfectly frictionless machine does not seem to imply the existence of such an object. No more does our *idea* of universal justice among men mean the actual *attainment* of this ideal. May it not be asked, therefore, if the *idea of* and *belief in* a perfect Being prove that Being's existence? The answer given to these questions by many is "yes." For it is argued, that a Being *perfect* in many ways, such as goodness and power, *would still be imperfect* were He not also real or existent. In other words, that *perfection implies existence,* is the reply given to him who doubts. "Things" with which we are commonly acquainted, even the whole universe, are imperfect, it is argued, and these imperfect entities imply the perfect. The imperfect leaf implies a perfect one as a pattern or ideal; the unjust act, a standard just one. We thus at least have the *idea of the perfect,* though we cannot see, touch, or hear this entity. And, since perfection is held to *imply* existence, God, as a Perfect Being who is in some relation to this imperfect world, must be concluded to *exist.*[3] Without raising the question at this point whether this "ontological argument" is valid or not, one must admit that it is very widely advanced and accepted, either clearly or obscurely, as are also the teleological and cosmological arguments.

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[2] This argument is given by Aristotle, Augustine, Anselm in the Monologium, Thomas Aquinas, Geulinx, Spinoza, Hegel, Fichte, Bradley, and many others.

Science as such does not, however, concern itself with these problems, taking merely an attitude of indifference toward them, but many individual scientists, prompted by a wider philosophic interest, do attempt solutions of them through the use, perhaps, of scientific data alone. Most philosophers, however, have considered that science as such is not capable of giving either proof or disproof of God's existence, but that both the problem and the means for its solution lie in quite a different realm of fact. In accordance with this view different lines of proof are advanced. One of these argues *from* the historical fact of an almost *universal belief* in a Deity *and* the *effectiveness* of this belief, *to* the Deity's existence. This is the historico-pragmatic proof.[4] Another line of argument bases its proof on revelation.[5] However, both of these proofs can be reduced to the *ontological* proof,—the historico-pragmatic proof, since it substitutes for the *idea* of a perfect Being as "held" by the *individual,* that same idea as "held" *by many,* both historically and racially; and the proof from revelation, because it argues from the idea of God as given in revelation to *revelation as given by (an existing) God.* In this second proof it is maintained that, if *tradition* is *trustworthy, revelation* also is, and then, that *God exists* because, according to revelation, *He asserts His existence.* Appeal is then made to the identity of God with the Perfect Being, and from His perfection is *deduced* His existence and *veracity.* This *veracity* guarantees the *truth of revelation,* and from this last there is in turn derived the trustworthiness of that *tradition* in which both the *belief in God* and *revelation* have been handed down.[6] This is essentially the argument of both the Protestant and the Catholic churches, with the difference, that the former rests its proof on the infallibility of the Scriptures and the reliability of tradition, whereas the latter bases its proof on what by its own philosophy is its own *exclusive,* God-given ability and knowledge *to interpret* both *tradition* and Scriptures correctly, and to distinguish truth from falsity.

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[3] Anselm, *Proslogium,* Chap. III., trans, by S. N. Deane; Descartes, *Discourse on Method,* and *Meditations.*

[4] *E.g.,* Father Tyrell, *Lex Orandi,* 1903; *Lex Credendi,* 1906.

[5] The Apologists, such as Justin the Martyr, Tertullian, Origen, Augustine, Aquinas.

Each position is difficult to grapple with, since each *logically can deny* to him who is "outside" and who may doubt, the *very ability* to get at truth, maintaining that this is given alone to him who believes and accepts and is *within* the church. Also, either position *may* be true, since truth is independent of proof, while disproof of either is impossible, or, at least, difficult, since attempted disproof of either position is possible only from a standpoint that is "outside" the realm of that which it is desired to disprove, and therefore gets no logical leverage.

The theological problem in its various aspects is one, therefore, that has arisen in the past and that still presents itself for solution. Psychologically it is, perhaps, *not a problem* to the unthinking adherent of some orthodox religion. But to the reverent thinker and critic who does not hesitate to submit any question to the examination of reason, and who holds that all of mankind's beliefs and theories must be so subjected, it is a most important *problem.*

[6] A. Sabatier, *Religions of Authority.*

CHAPTER IX

THE PROBLEM OF VALUES

THE theological problems which have just been briefly discussed are most intimately connected with the problem of values. A value may be defined, tentatively, as anything that is desired and accepted as an *end* to be attained, or as anything that brings about the attainment of an end. For example, individual and general happiness are values, as are also a clear conscience, contentment, good health, all-round development, honesty, honor, loyalty to friends, love, unselfishness, education, exercise, good laws, and thrift and industry. Some of these, such as the last five, may be *means* by which other values are attained. These other values might therefore be ultimate *ends* or *goods,* and the means to attain them be *right* ways or mediate values. This may be the difference between *the good* and *the right.*

As already indicated, the problem of values is closely related to the theological problem. It is, also, no less closely connected with the teleological and the cosmological problems. For it may be asked, Have not the *order,* the arrangements, and the exquisite adaptations which we seem to discover in nature, been *instituted* by a Supreme Being primarily for *man's welfare,* or for his happiness and contentment, or, at least, for his strength of character after much trial and tribulation? Do not *all* "things" seem finally to lead to that which we regard as *good* or even as *best,* so that they must have been *meant* for this purpose by a Supreme Being who so intended and established them, and *in this way has revealed a proof of his existence and character?*

In terms of the problem of value, therefore, God is that Being who cares for the good and who also brings about the attainment of or the tendency of "things" *toward* that which is *good,* let this be human happiness, or contentment from well-doing, or a life in heaven. Then God must himself *be* good. Indeed, it may be, that He himself *is the Good,* and that to attain good is to be one with God. But if He *is* good, and so cares for the good, and brings it about, then must He also be a God who knows and wills and has power.

This teleological argument both for God's existence and for His nature is advanced. It is clear, however, that, leaving open the question whether it is a valid argument or not, there would be *no occasion* for making it, were one not convinced that there *is something of value,* either as an ultimate end, such as happiness and justice on earth, *or* as a *means* to these ends, such as thrift and foresight, honesty and brotherly love.

But there is no denying that *values* are discovered. Thus, *e.g.,* we speak of *that inherent worth* of each personality or soul which commands our respect, and our recognition of the principles of duty and justice. Happiness, too, seems to be, under certain conditions, worth while of itself, and even more certainly do the sublimity and beauty of nature, as well as of some of man's creations, such as the beautiful picture and statue. Or, if these are not *inherent* worths, then they are at least valuable as *means* to *some end as a final value,* and the essence of the situation remains the same. There *are* values or worths, some ethical or moral, others æsthetic; some are means to ultimate ends, others are these ends themselves. Every-day life in all of its relations of love, friendship, occupation, citizenship, religion, art, science, and philosophy is based upon them. Indeed, to deny values is to presuppose them—unless one's denial be quite unmotivated. "Free" [illegible]

that [illegible]

The existence of values, then, is a fact that has been universally admitted by all people, of all times. Concerning the relationship and classification of values, however, there is a specific value-problem. *Is there one highest value to which all others are subordinate?* Is there a highest *ethical* value? Ought we, *e.g.,* to make the attainment of happiness, especially of others, our chief aim of life? Or ought we to set the unflinching doing of the right, even at the cost of pain and suffering, above all else? Or, again, is the harmonious development of our mental and physical nature that for which we ought chiefly to strive?

Which standard shall we accept? Indeed, by what test or *standard* shall we be able to reach a decision in *this issue between standards?* This, after all, is the important question. For, with the *ultimate value* once decided, other values can be "measured" by it. Yet it may be that there is *no* ultimate standard, or, at least, not one that is known. For to *know that there is a* *standard,* and to *know what this standard is,* are two distinct "things." Or, there may be only a standard that *changes* from generation to generation, even as it also differs from nation to nation. Here, therefore, is *another problem of values.* It is the problem, not of *what* the standard is, but whether there is *an absolute and eternal standard* that is knowable, though perhaps now unknown, or, whether there is *only a changing standard,* created by the past for the present, but to be supplanted in the future by that which grows out of this present. Here we have the contrast and perhaps the conflict between Absolutism, on the one hand, and Relativism or Evolutionism or Pragmatism, on the other.

Yet, while it is admitted that we recognize values, accept them, and act upon this acceptance, since we are concerned with character, with happiness, with duty and the like, it is still to be asked, Just what is a value? To *exemplify* and be specific, let us ask, whether there would be happiness and character, if there were no *conscious human* beings to be happy, to have character, *and to seek these as ends?* Or, do these values exist also for other living beings than man? However, even granted that they do so exist, are they not limited to beings that are *conscious,* so that there may be *desires, interests,* and *ideals?* This question is answered in both the affirmative and the negative. Thus it is held that *all* values are in some way dependent upon the *presence of consciousness* as this is found in living beings, and that values are facts *only if* there are beings that have *purposes* and *interests* and *ideals,* and that use *means* for the attainment of *ends.* This position is taken with reference both to ethical values and to æsthetic values, such as beauty, in which latter case it is not unconvincing. For is not that which is accepted as beauty either in the concrete or as a standard of beauty known to vary both with the individual and with the nation or race, as is exemplified by the different æsthetic standards, *e.g.,* of the European and the Oriental?

Is not beauty, therefore, dependent upon a *subjective* factor? Is the picture beautiful except to the observer? By itself is it not just so much paint and line? The completely subjective view of the nature of value, thus suggested, is accepted by some thinkers. By others, however, it is maintained that at least certain values are quite objective, in the sense that they exist quite *independently* of all desire, interest, and appreciation,—indeed of all consciousness. For example, one may hold the view, that there must have been value in the universe *before* consciousness existed, in order that there might be at a later stage that situation in which there *is* consciousness and those values which are dependent on consciousness.

Accordingly we have the problem, Are all values dependent upon consciousness, or are only some values so dependent; *or,* are *all* quite independent of this entity? Several solutions are given to this problem, and each has interesting consequences.

Thus, let us first consider the view that *all* values are wholly dependent upon a consciousness. It follows from this position, that there would be no values prior to the existence of consciousness,—a conclusion that is not invalidated by the argument which maintains, on the one hand, that there always are values, because there always is a divine consciousness, and, on the other hand, that there *is* this divine consciousness, *because* there are values. *If all* values are thus dependent upon a human or an animal consciousness, and God is defined as that Being who is *identical with values,*—a current definition—then it follows either that there is no God in the orthodox sense of the term, or that God is man-made, or both. [illegible]

However, as opposed to this extreme, subjectivistic view, it may be, that there are some values which can be demonstrated to be *independent* of all consciousness, so that the Deity may be identified with that which *is value in the universe.* For the conviction, that there exists or that there is actual in the universe, such a principle of the conservation or even of the *increase* of value, may, after all, constitute the deepest and most fundamental religious consciousness, so that there is a rational defense of the belief in a Deity who is not a mere replica of human personality, but who is a Being supra-personal, and perhaps supra-conscious.

It remains to consider one more phase of the problem of values, namely, whether Truth itself is not a *value.*[1] Is it not this, *because, e.g.*, in searching for truth in the spirit of "truth for its own sake" and quite *regardless,* as we may think, of values and their fate, *we are nevertheless seeking for something that is of value?* From this cannot the inference be drawn, that, because *our valuing truth* conditions our search for it, and because truth is valuable, therefore *truth is conditioned by its value,* or by our attitude toward it?

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[1] The pragmatists and humanists would say that it is. Cf. also W. Windleband, *Wille zur Wahrheit*, 1909, and H. Rickert, *Die Grenzen der Naturwissenschaftlichen Begriffsbildung*, 2nd. ed., 1913; Münsterberg, *op. cit.*

The reply to this inquiry is, that, while truth undoubtedly is a value either quite for itself or because of its usefulness, or both, nevertheless *the value aspect of the truth does not constitute the truth,* but that the truth and the value are merely two aspects of one and the same "thing" in different relations. In support of this position it will be admitted, that, *e.g.*, one and the same individual man may be a brother in relation to one person, and a father in relation to another. Further, while a father is not of necessity a brother, nor a brother a father, these two characteristics are quite compatible in the same individual. By the same logical principle, there may be, therefore, "something" that in one relationship is *truth,* and in another, *value,* so that not only is truth a value, but values, as known, are truths.

To explain this further, let us assume that there is a world of fact, with no minds or consciousness present in it. Let us assume, next, that under certain conditions consciousness, awareness, or "knowing" appears, and that accordingly our world becomes known (as it really is) in certain details. When there is *this very specific relationship* between a knowing process and that which is known, we will say that *truth* exists or subsists. Yet it must also be granted that conscious processes can take place, and yet *this specific relationship* be lacking, *i.e.*, that there can be error as well as truth.

Truth, then, is *a specific relational state of affairs that subsists between certain conscious processes and that which is known.* It can, perhaps, be defined only in a circle, namely, as that relational complex which subsists when things are known *as they really are.* But this specific complex is also a *value,* since either its attainment is desired or purposed, or it is a *means* to something else that is desired. In other words, a certain relation *is, by itself,* truth; but *this relation* may in turn be related to something else even as, *e.g.*, *brotherhood* is a relation that is related to sisterhood. Thus that relation which by itself is truth, is, in relation to purpose, also a value.

CHAPTER X

THE EPISTEMOLOGICAL PROBLEM

THE discussion of the preceding chapter has already introduced certain phases of the epistemological problem. Is truth a value? And, if it is, what is to be inferred from this fact regarding the further character of science, philosophy, and common sense? What is the nature of knowledge and of truth? Are they *distinct* from one another, and *both* in turn distinct from *fact; or,* does knowing in some way itself *"make"* fact? Again, are *truth* and fact identical? What is the origin of knowledge? Does it *all* come from sensation, or does some knowledge have some other source? What are the limits of knowledge? Are there realms to which we cannot penetrate by either intellect, intuition, feeling, or sensation? These are all special epistemological problems, around which, as a center, most philosophical investigation of the modern period has turned.

One of the most important of these problems concerns the possible distinction between *fact, knowledge, and truth.* The *prevailing* view in both *science* and *common sense* is, that fact is independent of the knowledge of it, that *knowledge* is a *specific* kind of mental process, and that *truth* is a relation of "correspondence" between knowledge and fact. Accordingly, a *true idea* is regarded as a sort of *mental picture* of that of which it is an idea.

This view, however, is not only challenged now, but it also has been frequently questioned ever since the time of the English philosopher, John Locke (1632-1704), who was its modern sponsor. All philosophers do not accept the distinction between fact, knowledge, and truth, and among those who do not are the pragmatists, the phenomenalists, and the idealists. Yet each of these "schools" raises different questions concerning the distinctness and the relation of these three "entities," and thus each discovers specific epistemological problems.

The pragmatists, or, at any rate, some pragmatists, maintain that the very nature of truth, namely, that which is sometimes called the "correspondence" between an idea and its object, is only the *later experiencing* of that to which the idea *previously* "pointed." They contend that an "idea *becomes* true," and that that which is commonly regarded as the *independent object* is only the content and the product of an idea *to which truth* has *happened,* because the idea has led to *success and satisfaction* of one kind or another.[1] The idea merges, as it were, into an object, and, behold, there is truth!

This point of view is not altogether easy to understand, but a figurative description may help us to make the matter clear. The position may be said to mean, that truth is "made" in *a single line* of experience, of ideas, of purposes, and the like. The opposed and usual position may, in contrast, be described as the *right-angled view.* According to the latter there is one series or line of ideas, and another series of facts, and between the two, striking across at right angles, as it were, there is the relation of correspondence.

A problem arises, therefore, because it is so difficult to understand and especially to justify such a "copy theory," as the "parallel line" and "right-angled view" may also be called. For there is the question as to *how,* if we *as knowers* are *on* or are *identical with* "the idea line," as we seem to be, we can ever "get off" this line so as to *compare* it with, and thus discover that it is a *copy* of, "the object line." In the case of a picture and *its* object one *can* do this, but one then has the *two* entities *before* him, and readily discovers the "picture"—or correspondence relation. But the critical question arises, How could a picture itself discover *that it is a picture,* since it could never get outside of or beyond itself, thus to look back and compare itself with its object? Would not a third "point" be necessary, on which to stand, in order to make the comparison and the discovery? Then it may be asked, How can the ego, or the knowing process, be successful in such an attempt, *if* the knower *is that very series* of ideas which are supposed to be the "copies" or "mental pictures"? *Is there any proof, or any way of proving, that an idea is in any sense a copy?* Indeed, is it not an unwarranted assumption, both of common sense and of science, that such a relation in any way constitutes true knowledge? This is the problem, and this the criticism made by the pragmatist, who reaches the conclusion, therefore, that the truth of an idea does not consist in a "right-angled" correspondence between the idea and its object, but that an idea *becomes* or is made true through that later experience in which there is some sort of confirmation, successful working, and satisfaction.[2]

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[1] *E.g.*, James, *Pragmatism*, especially Chaps. II., VI., and VII. Cf. also the works cited in the later discussion of Pragmatism in Chap. XXXIII.

The pragmatist, therefore, does *not* distinguish in the same way as do some other philosophers, *fact, truth,* and *knowledge. Fact,* for him, is that which fits consistently into a system of ideas which are *made* knowledge or truths by later experiences. Fact is the content of that knowledge which *thus* becomes true. And, finally, *everything is "experience";* for it is inferred that, because everything that we mention, think of, and experience, *is* mentioned, thought of, and *experienced,* no object can exist apart from thinking and experience, *and* all objects are merely content of experience or are, indeed, *themselves experience.* Truth, knowledge, and fact are *thus* all reduced to a common "something," *experience,* and in this respect do not differ from one another.[3] Very Tenable.

The phenomenalists and the idealists agree to a large extent with the pragmatists in this conclusion, although their mode of approach is somewhat different. For both, facts or "things" are *"made"* or *constituted,* at least in part, by virtue of their relation to perception, or knowing, or, in general, to experience; *i.e.,* since it is held that experience can *never be eliminated from the "things" which are experienced,* it is concluded, that *the experienced world is constituted, in part at least, by the experience,* so that we are *confined to experience* (as regards that which we experience). It is thus that the idealist argues that *the universe itself is psychical or mental,*[4] *and* the phenomenalist that the *known or experienced world* is psychical. But the latter philosopher holds that there is also another, a possibly *non-mental* world *beyond,* that *never can be known,* since to experience it is to *alter* it.[5] For *both* idealist and phenomenalist, however, *fact,* truth and knowledge are mental in nature. In this respect at least there is no difference between these two philosophies.

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[2] See James, *Pragmatism,* especially Chap. VI.

[3] This position is taken by, *e.g.,* Professor Dewey all through his writings of at least the last thirteen or fourteen years; cf. the bibliography of Chap. XXXIII.

All philosophers, however, do not agree with the three positions just presented. For example, the realist does not, and, as he maintains, for good reasons. He agrees with the pragmatist that truth may not be identical with a "picture-like correspondence" between idea and object, and that at least *some* ideas are tested for their truth by their outcome. But, against the universality of this last doctrine the realist finds that, while every idea has an outcome of some sort—an outcome presumably satisfactory to some mind, especially when there is *belief* in the *idea—the mere outcome* nevertheless fails to give the requisite distinction between the true and the false. It is not the mere outcome, he finds, but *the difference among outcomes* that distinguishes the true from the false—a difference that may itself well be conditioned by the respective truth and falsity of that which has an outcome. Truth and the test of truth, therefore, may be two very different "things." The truth of an idea may, indeed, be that very characteristic which conditions *the* specific kind of outcome which is *a successful test* for truth, when the idea is not antecedently held to be true. Thus conditioned, *this* outcome in turn is of the kind that may serve as a test for truth.[6]

From such discussions, given us by the pragmatists, another epistemological problem emerges. *Is there an absolute truth* to which our knowledge may approach nearer and nearer, though never reaching it? Realist, idealist, and phenomenalist for the most part agree that there is, and in this respect are "absolutists." But the pragmatist demurs.[7] For him, since truth is "made" by a shifting, evolving experience in which success and satisfaction may finally emerge, *truth changes.* It is *relative* to the time, the place, the nation, the sect, and even the individual. Therefore there are *many* truths, even though they conflict, as is well illustrated by the "truths" of Christianity and of Buddhism. For the pragmatist, both of these religions, so far as they contain doctrines that succeed, or that have satisfactory effects, are (*theoretically*) true.

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[4] For the subjective idealist the *experience* is that of a finite conscious being, while for the objective idealist it is that of an absolute, divine, conscious Being. Cf. Chaps. XXX., and XXXIV.-XXXVIII.

[5] For Kant and the Kantians, see Chap. XXIX.

[6] See Chap. XXXIII., IV., and Chap. XLIV.

The argument advanced for this view is two-fold. It is maintained, on the one hand, that, because experience "makes" both truth and fact, and yet itself grows, changes, and varies, there is also only a shifting truth and fact.[8] On the other hand, it is argued, that *the very ideal of absolute truth,* as well as all tests therefor, and all the methods of proof, do themselves but shift and vary, imbedded as they are in an ever-changing experience.[9]

With this view the absolutist disagrees. For him there is only *one truth, one state of affairs, one set of facts, to be discovered* in each field. This position, he contends, is established by the *reductio ad absurdum* of the opposite position, since *to claim that all truth is relative and shifting,* is to *presuppose that this claim or position is itself an absolute and permanent* and not a relative and shifting *truth.*[10] But it is also argued, that, since truth and fact may be independent of their tests and of proof, there may be *absolute* truth and fact, although we have no absolutely certain methods of identifying or "recognizing" these in the process of obtaining knowledge.[11]

Truth, however, supposing there is *one truth* about each fact, or each set of facts, consists of *many truths.* Truths form a *system.* There is the problem, therefore, as to *how* truths form this system, *how* they are related, or what *kind* of system truths form. Does, *e.g.*, the *relatedness* of truths imply that each truth is *dependent* upon other truths, so that it is impossible to get at the truth about any one "thing" unless we also get at the truth about *all* other "things"? *Or, are truths related and yet independent,* so that it is quite possible to discover now one truth and now another, as knowledge progresses? The first view, that truths, because they are related, mutually depend on and modify one another, like the parts of an organism, is called the "organic" or "coherence" theory of truth.[12] The second view may be called the pluralistic theory. Obviously the basic problem here is again the question, whether *relatedness as such* carries with it a *mutually modifying* action of related terms on one another, or whether this is only sometimes the case, and thus presents a specific type of relation? [13]

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[7] *E.g.*, James in his *Pragmatism*, Schiller in his *Humanism*, and Dewey in *Essays in Experimental Logic*, 1916.

[8] James and Dewey, *ibid.*

[9] Schiller, *ibid.*

[10] Royce, "The Eternal and the Practical," *Phil. Review*, Vol. XIII., p. 103 ff., and "Principles of Logic," *op. cit.;* cf. Chap. II., *supra.*

[11] Cf. Chaps. XXXIII., XLII., XLIV.

At this point, therefore, the further problem arises, if it is not to the growth of our united social attempt to obtain knowledge, rather than to the system of truths, that the organic view applies,—while the system of facts, which we endeavor to know, is pluralistic in the sense above defined. Indeed, is not even this very difference itself *a state of affairs* that is a typical case of such pluralism?

Truth, however, might either be an organic whole, or consist of truths related to and yet independent of one another, and yet there might be but One Truth, *i.e., one system of truths.*[14] But there would still be the problem as to *how* we can discover or make certain that this One Truth has been *attained* either in whole or in part, *i.e.,* there is still the question as to what is the *test of absolute truth,* and of genuine and certain knowledge. Indeed to have such truth and knowledge, must we not have an absolute test? But to have this must we not *in turn* have a test for *this test,* and so on indefinitely? [15] *Or could a test be used to test itself?* These questions are raised, and many answers are given. Various tests for truth and knowledge are advanced, but in every case more than one interpretation is made of their character. Consistency, freedom from internal contradiction, presupposition by attempted denial, immediate, direct, and undeniable experience, subsequent verification, self-evidence, and the inconceivability of the opposite, are among the tests and criteria that are accepted and used, one or more of them, by each of the several philosophies.[16] Disagreement exists, however, as to which of these tests is superior. But against all other parties the pragmatist maintains that all of these tests are but *useful* means to an end, or kinds of satisfaction and success, and thus relative and not absolute. From this he infers that truth itself bears, or *is* the same characteristic,—namely, usefulness.

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[12] Joachim, *The Nature of Truth.*

[13] See Chap. XXVI.

[14] See Chap. XLI., xv.

[15] See Chap. XLI., ix.-xi.

From this inference the absolutist demurs. He grants that tests and testings may be fallible (though he usually insists upon the high degree of probability of certain tests as absolute), but he also maintains not only that there is an absolute truth and an absolute *state of affairs* to be discovered, but also that these may be actually revealed in certain instances even though absolute proof of this is lacking. Truth and knowledge are independent of proof, although *certainty* may not be, and one may "really know," without being able to demonstrate *that he does.*[17] Indeed, were this not the fact, then whoever advances *the contrary position* would be quite precluded from maintaining that his position is itself true, unless it were *absolutely* established by *absolute* tests and proof.

Still another epistemological problem emerges in the question as to what is involved in the fact that *knowledge* and knowing appear in *many* individuals. Is it not therewith necessitated that these individuals are essentially alike? Must not their knowing processes, their "thinking machinery," be quite the same in order that they shall be able to get at the *one truth,* or the one set of facts in each case? But how can these conditions be attained, and where can they be found? Are two individuals ever quite alike? Are not their sense organs different? Do they not, therefore, perceive differently? Are they not also of different temperaments? Will they not, therefore, rely upon different tests of truth, and start their arguments from different convictions? Will even the same word convey the same meaning to two individuals? With such obstacles as these, *how* can there be any such thing as *knowledge,* which, by its very nature, should be the same for *all?* How can two individuals ever have one fact revealed to them in precisely the same way, unless it be by pure chance? Will not one or the other, perhaps both, distort it?

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[16] See Chap. XV.

[17] See Chaps. XXXIII., XLII., and XLIV.

Both the individualistic position, thus suggested, and its opposite are taken by philosophers. The problem is that of the "universality" and common validity of knowledge, and of the conditions for this. Both positions are compatible with the view, that facts are facts,—to be got at if possible,—and that there is but *one system of truths,* the attainability of which is an ideal; but they differ on the question, as to whether it is possible to get at facts at all, or to attain to the *one* truth? In the one position it is maintained that, while there are differences among individuals, this does not preclude *likenesses and identities* in our "knowing apparatus," and that, relying upon *these,* we are justified in further claiming that the ideal *one truth* may, at least in certain cases, be attained. This is also possible, since, although there may be no absolute test of absolute truth, truth may be quite independent of proof and of testing. The other and opposed position, if it will not admit of *likenesses* in knowing processes in the midst of differences, has only one recourse left. It must acknowledge *complete individualism* in respect to intellect, moral judgment, and æsthetic feelings and appreciation. Each individual can rely only upon himself, and that completely in each of these fields, with no apparent means of bridging the chasm from one individual to another.

Destructive as this position seemingly is of all motives for social intercourse and coöperation, it has, nevertheless, been theoretically maintained now and then ever since the Sophists first advanced it. But, it may be asked, Is not the *means for the refutation* of this position rather freely offered by him who argues it? *If* one cannot get beyond the individual peculiarities and differences *to that* in which individuals are alike, as they are supposed to be in their "pure reason," then, on the one hand, *why* should one ever attempt to *convince others of the truth of the individualistic position?* But, on the other hand, if one makes this attempt, does he not therewith presuppose that there is *something* which is *common to* and *alike in* individuals side by side with differences—something, namely, that is "over-individual," even as *reason* is supposed to be? It suffices to say, that the latter alternative is accepted by most philosophers, and that the first alternative is regarded as worthy of little attention. Yet the problem must be regarded as a legitimate one, with individualists and "antis" as the contending parties, and with various ramifications, from both positions, extending into the solutions given to other philosophical problems.[18]

Suppose it be granted, then, that, side by side with feelings, desires, motives, and the like, which may be *purely individual,* there are *also reason, knowing, and knowledge* that may be the same in many *individuals,* there remain still other problems. *How does knowledge arise?* What is its source? Using the term "cognition" to designate all perception, memory, imagination, and reasoning processes, there is the problem, Does all cognition have the same source? Does it all come ultimately from, and is it all like in kind to, *sensation?* Or, is *some* cognition, notably reasoning, together with its principles, an independent and peculiar kind and source of knowledge in conjunction with, but different in kind from, sensation?[19] Two positions are taken in solution of this general problem. According to one, namely, Sensationalism, *all* cognition, *all* knowledge, *comes from,* and is but a *transformation of sensation.* According to the other, Rationalism, at least *some* knowledge does *not* thus originate, but is reason's own peculiar contribution.

Empiricism, in the historical and *narrow* sense of the term, either agrees with Sensationalism in "reducing" reason to sensation, *or,* if it does not go quite so far as this, at any rate *denies* reason's independent ability to discover fact and to get at truth, and allows it by itself only the function of vain speculation and castle-building. However, we are all empiricists in the *broad* meaning of the term, since experience of some kind must be accepted as the one source of discovery. But historically the term "empiricism" has been almost exclusively used to designate the view, that *both* the source of all knowledge *and* the test of all truth is ultimately *sensation.* Then the term "rationalism" may be used to designate the position, opposed to this narrow empiricism, that *all* experience, even sensation, must be subjected to *reason's test as the court of last resort.*

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[18] See Chap. XLI., viii.

[19] See Chaps. XLI., xiii., XLIII., and XLIV.

Distinct in some ways from this problem as to whether reason or sensation furnishes the ultimate test for truth, is the question, whether reason reveals fact and reality to us, or only *invents* schemes that are *useful* methods for the accomplishment of practical results and purposes. Both positions are taken, the former by the *intellectualists,* the latter by the "antis," *and both parties present arguments for their position,* the anti-intellectualists thereby placing themselves in the embarrassing position of using intellectual and rational means and principles in order to establish the very position which denies the validity of the means by which it has been established. One of their arguments is that that analysis with which reasoning methods are at least partly identical, leads to results that are *self-contradictory,* and therefore *false.*[20] Thus the claim is made that only immediate and intuitive experience reveals fact, and that the great fact revealed is that of an ever-flowing and ever-changing universe, which intellectual analysis "makes" into a manifold of *unchanging* elements or parts. Motion is the *typical* case selected; and it is argued (falsely) that the analysis of motion shows, that at every instant a moving body is *at a specific point,* and so at rest—rest being the contradictory of the "thing" analyzed, namely, the motion. Thus the conclusion is reached, that *only* non-intellectual, non-rational methods, such as intuition, appreciation, and feeling, reveal reality and fact, and that accordingly we must be intuitionists, emotionalists, and evolutionists.

The intellectualist opposes all this with the position that, although non-rational processes may reveal fact, they are not the only processes that do this. For it can be shown that reason and intellect, and the methods of analysis in general, also reveal reality, and that the falsifying character that is ascribed to them disappears, if one but state their analytical results correctly.[21]

It remains yet to present one other, very important epistemological problem, upon the several solutions of which there depend some of the most distinctive features of Idealism, Phenomenalism, and Realism. This problem concerns the question as to *what is involved in or implied by the fact, that every reality, every fact, even every illusory object that is known, thought of, conceived, mentioned, or perceived, and the like, is a reality that is known, thought of, conceived, mentioned, or perceived, so that any attempt to know a reality as it is as not so known,* is apparently doomed to failure. For, it is asked, Is not the only world which we can "get at," *one that is related to our knowing, or to our experiencing in some manner?* Therefore, is not the question, what the world *is,* as *not* so related, *incapable of solution,* since to attempt to answer it is *but again to relate the world to some "knowing" or "experiencing"?* The difficulties of this situation constitute the so-called "ego-centric predicament." [22]

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[20] *E.g.,* by Bergson in *Creative Evolution* in any number of statements.
[21] See Chaps. XXII., XXIII., and XXIV.

The possibility of a solution to this problem depends on *whether or not* the fact, that all reality which is experienced *is related* to an "experience" or an "experiencer," *implies that a difference is thereby made* to the reality or the entity experienced.[23] For, on the one hand, *if* the "experiencing" does make a difference to or does affect the experienced reality in some way other than to make it "experienced," *then clearly unexperienced realities are different from experienced ones,* though we may never be able *either* to know *in what respects* they differ, *or,* indeed, experience them in any way. But, on the other hand, *if* the "experiencing" *makes no difference* to the reality *experienced,* then, of course, the reality is the same *"when"* experienced *as* "when" not, and exists or subsists as quite independent of experience, *to be experienced* only when those *specific conditions* exist through which experience arises. In fact, objects as *experienced* might themselves give evidence not only *of their own independence* of experience, but also of the existence or subsistence of still other objects that have never before been experienced, at any rate in certain *specific* ways.

The second position is the one that is at least *tacitly* held by *the common sense man and by most scientists.* It is not, *however,* looked upon with favor by many of those who are sophisticated in the ways of philosophy, and who find one reason or another for maintaining *not only* that "the world" is *always an experienced one,* but also that "experience" *affects "the world" in some way and makes it what it is either in whole or part.* One may be of the opinion that the issue thus raised is to be easily settled by *appealing to fact,* and, indeed, each party seems to think that it makes just this appeal. But the facts to which the appeal is made are not simple, especially since such a means of settling the issue only again repeats the difficulty of finding a fact that is *not* experienced in some way.[24] However, let it be granted that all that *we* can perceive, think of, appeal to, and the like, *is* thereby experienced—in some way; and let it be granted also—as it must be—that, in the case of all experienced reality, the "experiencing" and the reality are related. Then what follows from *this experienced fact?* Can it be (correctly) *inferred* from the *ever repeated presence* of "experience" to "experienced fact," or from the *mere* fact of the relatedness of experienced reality to "experience," *that the experiencing affects the reality?* Assuredly not! This inference can be made only provided it is *universally* true, *that, because entities are related, they affect one another.* But this is the very question at issue. Does relatedness *universally* carry with it, or imply, causal dependence and action? *Or* is this the case only with *some* instances of related terms? And if it is thus the case, may not *the relation in question,* namely, that between "experience" and "object experienced," be *one of the exceptions,* so that we should be justified in concluding, with the realists, that, although "experience" and "experienced entity" are *related,* the latter is *quite unaffected* by the former, and is experienced *as if* the experience were not present?

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[22] R. B. Perry, "The Ego-centric Predicament," *Jour. of Phil., Psych., and Scientific Methods,* Vol. VIII., pp. 5-14; also see *The New Realism,* E. B. Holt and others, Introduction, and Perry, *Present Philosophical Tendencies,* Chap. VI.

[23] Cf. Chap. XXVI. on The Theories of Relations.

Whether this conclusion can be established or not, it is, nevertheless, one that is *not* accepted by most philosophers, notably by the idealists and the phenomenalists. These philosophers insist—unconsciously, perhaps,—that *relatedness implies dependence,* or causal modification; and, secondly, that experiencing is related to all realities experienced, *i.e.,* redundantly, that all (*experienced*) realities are *experienced* realities. From these premises are derived those consequences which are identical with the main features of their philosophical systems.[25]

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[24] The ego-centric predicament again.

However, as regards this procedure it is quite clear, that, *if* it is assumed (1) that *all* related terms are mutually *dependent* on and *affect* one another, and (2) that all realities are experienced realities, and so are *related* to experience, *then it follows,* of course, that *all* experienced realities are experience-modified-realities. But it is also quite clear, that from this second premise alone this conclusion cannot be correctly inferred. It is correctly inferable only if this premise is taken *with the other,* the major premise, namely, that *all* related terms are mutually dependent on and affective of one another. It is only these two premises *together* that imply that an experienced object is *affected* by the experience of it, whereby it *becomes* the *experience-object.*

The question at issue between the realist and his opponents is, therefore, whether *this major premise applies to all related terms,* and so to the specific relational situation of "experience" *and* reality. Accordingly it is important to ask *how* the idealist and phenomenalist endeavor to establish this premise or principle. The answer is, that there are certain instances in which the related terms do *seem* to exert a causal and modifying influence on one another. Good examples of this are the mutual dependence of the parts of any organism on one another, the causal influence of physical masses in accordance with the principle of gravitation, and the mutual induction between positive and negative charges of electricity. Let the knowing, the experiencing, the cognizing *of* an object be of the type of these instances,—and that they are is precisely what the phenomenalist concludes in generalizing from them as typical instances,—*and it then follows* (1) that "things" *"outside"* of the "knowing" and "experiencing" *relation* are *different* from what they are *"in"* it; (2) that knowing and experience *do* affect things; and (3) that the nature of "things" "outside" of this relation can never be known, since to attempt to know "things" is to affect and *change* them. In other words, it follows, on the one hand, that there is a realm of *unknowable,* and not merely unknown, *things-in-themselves,* and, on the other hand, that our world or universe—the only world that we know—is *made* what it is, at least in part, *by being known*.

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[25] See Chaps. XXIX., XXX., and XXXIII.

To the *support* of this conclusion the idealist brings what he regards as the discovery of certain instances of related terms that are *constitutive* of one another either partially or totally. This seems to be the case, *e.g.*, with dream-objects and, indeed, with illusory objects in general, as it seems to be the case, also, with color, odor, and temperature,—*provided* the world outside our skins consists only of hard, fast-moving particles or masses. Why, then, should not *all experience* be of this type that is *creative of its own content?* Certain idealists unhesitatingly conclude that this is the case, and there results either Subjective Idealism, if the experience is that of human beings, or Objective Idealism if it is the experience of a universal consciousness.

The realist opposes both of these conclusions and arguments. *For him*, "things" *depend upon knowing* in *no* other way than for *being known;* knowledge does *not* condition reality; and epistemology is only *psychologically prior* to other philosophical problems; *i.e.*, one is first *interested* in the problem, only subsequently to arrive at the conclusion, (1) that knowing and experience do *not make any difference* to the "thing" known and experienced, and so (2) are *virtually* separable from that "thing."

The realist reaches this result by finding certain instances of terms that are *related* to *and yet independent* of one another, and by then looking for *other* instances. The *knowing processes* of the idealist and the phenomenalist *and* the theories that they propose *as known and experienced "states of affairs"* prove to be excellent initial instances of this compatible relatedness and independence. For, while the knowledge and the "state of affairs" proposed *as true*—in their respective theories, *are certainly related*, it is nevertheless presupposed, *as the very condition* for such a "state of affairs" being "the real genuine one," that it is *independent* not only of the specific knowing and experiencing process in the knowing individuals who maintain it, but also of any implied repetition of knowing in other individuals.

Other instances of terms that are both independent and related are found in the case of the points of space and the instants of time. Points and instants are absolute simples that are not made up of other elements on condition that, if they were so made up, there would still be some other absolute "simple" which we should then call a point or an instant. But as "composing" space and time respectively, these "simples" are related in a very definite way, namely, so as to form a *series* with the same relations present as are found, *e.g.*, in the series of *real* numbers *in order of magnitude. But no point is affected by being related to other points* on condition that, *if it were,* it would be, not simple, *but complex,* since it would then be *both itself and the affects* thus resulting; or, it would be affected by an infinite number of other points, and so would be infinitely complex, and thus again presuppose ultimate, simple "elements" that would be the real points. Then it would be these elements that would be related and yet independent in the sense that they would not be affected by other elements. In a perfectly analogous way instants can be shown to be independent of one another, and yet to be so related so as to form *that specific series which is time.*

[illegible]

Still other instances of *cosubsisting relatedness and independence* are as follows: Space as a whole is related to matter, but is independent of it. Empty space is quite conceivable, and is examined scientifically in geometry with *no implication* of matter, or of physical forces. . So also are matter, motion, and change in general related to time, and time to them; but time is independent of all these entities. The clock does not create time, nor affect it causally in any way; it only measures time in *units* that are *relative* to one another, but time itself is not relative.

If there are these cases of related *and* independent terms, then can it be consistently argued from the fact of mere relatedness, *either* that knowing modifies, or that it is in any way *necessary* to the existence of, (known) entities? And also can it be consistently maintained that, if all finite minds were annihilated, there must still be, as *necessary to the existence of the universe,* an "infinite" mind or spirit, *analagous* to a human finite mind?

For the realist the answer to these inquiries can only be "No." For, if there is a single case of the *knowing of a genuine* *and true "state of affairs,"* then the knowing *and* the (complex) entity known are, *together*, one instance, at least, of the *principle, that some entities are related and yet independent,*—and there may be other instances of this principle. This is the paradox. "Things" are known and *are related* to the knowing; but they are known *as if* they were not known.

But further, entities can *become* specifically related, and then *cease* to be so related. Thus a moving body of a certain volume occupies a certain space for an instant, and then no longer occupies it. "Occupying" is the relation that is both gained and lost. By this and innumerable other instances the realist is supported in his contention, that "things" can get *into* and *out of* the relation of being known without being affected thereby,—which alone is the *condition* on which "things" can be known as they really are, *i.e.*, on which there can be genuine knowledge.

But, still further, an entity in gaining and losing a specific relation can *retain* its relations to other entities. Thus a man can retain his several blood-relationships, and yet gain new relations of friendship. So also may an entity retain its several relations to other entities, and yet gain *that* relation to an organism which is identical with being experienced in some specific way.

These are instances of the evidence which the realist finds in proof of his contention (1) that entities can be related and yet be independent, (2) that specific relations can be gained and lost, and (3) that, with this the case, other relations can still persist. Especially does the realist maintain that these principles apply to the knowing and experiencing situation, and that thereby a solution is obtained for the *ego-centric predicament.*

This solution is essentially the same logically as that which is obtained in the analysis of space. A point of space cannot be annihilated in order to determine what effect this annihilation would have upon other points. But by an *analysis* that leaves all the points *in situ* it is found that, *as the condition* for a point being a point and not a complex, a point is related to another point *as if* it were not so related, *i.e.*, without being affected in its simplicity by *being related.* Similarly, while knowing and experience cannot be annihilated in the instance of *a known and experienced object,* it is discovered by an *analysis in situ,* that, as the condition for there being genuine knowledge in any specific instance, the object is known as if the knowing were not present. *This solution is presupposed* even for that situation in which the *opposed* "state of affairs" is asserted and claimed to be true, as it is in fact by the idealist, the phenomenalist, and by some pragmatists. For, notwithstanding that these philosophers attempt to base their respective positions on the insolubility of the ego-centric predicament, they themselves tacitly solve it by an *analysis in situ,* when *they* present specific *states of affairs* as true.

But further, with the realist presenting well-established exceptions to the position, that all "things" are what they are because of their relations to other "things," his opponents cannot maintain the *universality* of the theory of internal relations.[26] One is thus relieved from the necessity of admitting the positions frequently taken in epistemology, (1) that no problem can be isolated, since it is related to, and so modified by, other problems; (2) that we cannot know the truth about anything until we know the truth about everything; and, (3) that truth cannot be truth because it is a value. Contrary to these positions, which condition various specific tendencies in philosophy, the evidence just considered shows it to be possible, (1) that one problem at a time can be studied and solved; (2) that the knowledge of the "things" involved in one problem will not be changed by the knowledge of other "things"; and (3) that truth remains truth, although, as related to appreciation, desire, and purpose, it is also a value.

The epistemological problem in its several aspects still persists. In fact it is the problem that is most discussed in contemporaneous philosophy. But only one party thinks that it is not a problem that is *logically prior* to all others, and this party —the realists—takes this position because, having considered the problem, it finds that, *in order to know,* one need not first find the *how* or *whence* or *wherefore* of "knowing."

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[26] See Chap. XXVI., II., 2 and 3.

CHAPTER XI

THE PSYCHOLOGICAL PROBLEM AND THE NATURE OF CONSCIOUSNESS

THE preceding section has already introduced us to the psychological problem. Perception, thinking, knowing, and, in general, experience, are undoubtedly facts of some kind, but, of *what kind,* is the question. Already two fairly distinct answers to this question have been found and to some extent examined, especially as to their implications. By one group of philosophers, the idealists, the phenomenalists, and the pragmatists, it is maintained, that the cognitive consciousness is such that it *modifies,* or even *constitutes* known and experienced objects. This position is based on the assumption, that terms which are related affect one another. Clearly this view makes of consciousness, of knowing, of experience, the kind of "thing" that *can causally affect or even produce* the object, *and a term* that is a sort of *substance* is *able to do this.*[1] By another group, the realists, it is argued, that the basic condition for genuine knowledge is, that the "thing" which becomes known shall enter into, and, perhaps, pass out of the cognitive situation without being affected thereby. This is possible *only if the knowing is not a substance, but a relation, or a dimension,* or a quality, or, possibly and indirectly, an event.[2] Although there may be other sets of conditions in which there is knowing, nevertheless there is much evidence that the knowing situation arises when the complex *or* simple entity *that is to become known* gets into *certain specific relations* with another entity, *i.e.,* with an organism having a nervous system of a certain degree of complexity, and in a certain physico-chemical condition. Knowing situations—at least those with which we are best acquainted—disappear when *this specific complex* disappears. But this means that specific knowings appear and disappear. It follows that knowing cannot be an *absolutely simple term,* since such a term, illustrated by a point and an instant, cannot appear and disappear. Only on the hypothesis, therefore, that *knowing is a relational complex*—of a specific kind,—and involving, of course, a relation between terms, themselves either simple or complex, can the experienced fact of the appearance and disappearance of specific knowings be explained.

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[1] See Chaps. XXIX., XXX., XXXIV.-XXXVIII.

[2] See Chaps. XLI., XIV.; XLIII., III. and XI.

This is, in brief form, "the relational view of consciousness." It is one solution of the problem as to *what kind* of an entity consciousness is, and is held at the present time by a number of philosophers.[3] It is a view that is *also quite compatible* with the more orthodox position of experimental psychology, that specific consciousnesses are *events*. For *events are themselves relational complexes,—e.g.*, a specific *accelerated motion* is a *series* of velocities,—*and relations can themselves be related*—as are, *e.g.*, "greater than" and "less than," brotherhood and sisterhood. Therefore *consciousness as an event could be a complex of specific conscious relations that are themselves related in a specific way.*

This theory is *also compatible* with the view of a certain very modern school of psychologists, that the important thing in psychology is to study the objective manifestations, *i.e.*, the *behavior* of organisms.[4] For, *when* there are specific physiological conditions in this organic complex, and this in turn is related in a specific way to the entities to be known, *i.e.*, to the stimulus, *then* the knowing is also present, perhaps *as a characteristic of the whole complex,* organism *and* stimulus. Something occurs, something is done when this larger complex arises, and this can be studied *as the behavior* of an organism stimulated in a specific manner. The interesting corollary of this position is, that the knowing can not, in all cases at least, be said to be located within our bodies. Strictly speaking, it has *no* locus or place or position. Its conditions have, but *it* has not.

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[3] *E.g.*, by F. J. E. Woodbridge, E. B. Holt, W. B. Pitkin, and by the writer.

[4] See E. P. Frost, "The Belief in Consciousness," *Jour. of Phil., Psych., and Scientific Methods*, Vol. XIII., No. 10, and "Cannot Psychology Dispense with Consciousness?" *Psych. Review*, Vol. XIV., No. 21; D. Miller, "Is Consciousness a Type of Behavior?" *Jour. of Phil., Psych., and Scientific Methods*, Vol. XI., No. 8; E. A. Singer, Jr., "Consciousness and Behavior," *Jour. of Phil., Psych., and Scientific Methods*, Vol. XII., No. 9; Watson, "Psychology as the Behaviorists view it," *Psych. Review*, Vol XIII., No. 20. Watson in his *Behavior* gives a complete bibliography.

This view that consciousness is a relation is perhaps a difficult one to grasp. Relations seem to be evasive, evanescent, indeed, almost negligible "things." Yet are they not facts? And should we hesitate to admit that consciousness in each specific instance of its occurrence is a relation, or else a "new" dimension, *if* this conclusion is necessary in order to explain other facts?

However, many philosophers and psychologists hesitate to accept this "relational" or "dimensional" theory, and indeed historically it has not been a widely favored one. Consciousness has seemed to be, perhaps, too tangible, "solid," and substance-like, and to involve too much of a continuity and unity of personality to be a mere relation or a dimension. Indeed, the *traditional* view is, that empirically, both by introspection of one's own mind and by observation of other minds, an entity is discovered that is an *ego,* a *self,* a *soul,* a "something" that is of absolute constancy, and *anything but* a relation, a dimension, an event, or a disembodied quality. In fact, it is argued, that absolute unity and constancy are necessary in order to account for the continuity of personality and the unity of knowledge, and that this finally demands a numerically simple and indestructible entity somewhere in human consciousness.[5] *Relations,* it is contended, appear and disappear altogether too readily to meet this demand, while *complex entities,* such as specific dimensions, disintegrate, or, as existing, presuppose an *absolute unity* to bind them together, and *qualities* imply something of which they are qualities, and in which they inhere. Thus runs the argument of the opponents of "the relational view," and their names include the great names in the history of philosophy.

A very similar position has been advanced in modern days, since the law of the conservation of energy and the theory of evolution have dominated scientific thought, to establish what amounts to a principle of the *evolution* and yet of the *conservation* of consciousness. It is argued (1) that consciousness is so different from physical energy, that it cannot "come" from or arise out of this, yet (2) *that it is a fact* and must come from something; and, therefore (3) that there must be a *preceding* consciousness out of which it arises or is transformed. Thus the position is derived, that there is *either* an *all-permeating* universal, yet impersonal consciousness that exists in varying degrees in animal, plant, molecule, atom,[6] and even electron, *or* a great personal consciousness that "wells up" and is present in all "things," and is, perhaps, identical with God.[7]

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[5] *E.g.,* by Plato and Leibniz, and, perhaps, by Kant.

All this shows that the question of *the nature of consciousness* is one of the main philosophical problems. Indeed, it is a very pressing problem today in this period of revolt against many of the traditional philosophical methods and positions. Historically, in reaching solutions of the problem, the "substance view" of consciousness has been dominant. But this has been the case primarily because of the influence of the Aristotelian tradition, with its preëminent concepts of *substance* and *cause*.

The other psychological problems are more specific, and fall within the realm of empirical psychology as this is carried on by experiment and observation and by statistics. But this is not to say that the more general and philosophical problem as to the nature of consciousness is not to be solved by the use of similar methods, or that the solution of some of these more specific questions does not aid in the solution of this wider problem. On the contrary, two at least of the specific psychological problems are especially important philosophically.

Whatever consciousness may ultimately *be,* we nevertheless know some of the "things" that it *does,* and we have an empirical classification of its *different forms.* Thus we speak of knowing, feeling, and willing, *or* of cognition, emotion, and volition; of deliberation, instinct, and impulse; of attention, discrimination, and analysis; and of perception, memory, imagination, and reason.

If, now, evidence is found for holding that *consciousness evolves* along with the evolution of life, then the question arises, *what kind of consciousness was first.* Was it sense perception, or the mere feeling of pain and pleasure, or an "elementary" will, and are all kinds of consciousness only gradual modifications or outgrowths of a *first* kind? But these questions suggest others. Thus, *instead of arguing,* that in order to account for consciousness in higher forms, notably in man, its *presence* must be granted in the lowest forms, and even in atoms and electrons, could we not start with what we directly find in the lower organisms, namely *tropisms, reflexes, organic discriminations,* and the like, and then ask, if what we call consciousness in higher forms is not merely a *complex* of these *purely physiological* modes of behavior? [8]

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[6] *E.g.,* by Paulsen, *Introduction to Philosophy,* trans. by Thilly. This is also the position that is at least implicitly taken by most text-books on psychology.

[7] The position of many objective idealists; see Chaps. XXXIV.-XXXVIII.

But there is a second psycho-philosophical problem. Certain philosophical systems that are great not only in their influence as philosophies, but also in their alliance with the dominating religions of the world, find reasons for concluding that *the whole universe is ultimately conscious or spiritual in nature.* What, then, is the character of this universal spirit or consciousness? Is it a self, an ego, a spiritual unity? Is it *will, knowing,* or *feeling?* Or, if it is *all three* of these together, *which* is dominant, and what is the *relation* by which the three form *one relational complex?* In answering these questions the great idealistic or spiritualistic philosophers have differed and still differ.[9]

One further psychological problem must be mentioned because, through the solutions that have been given to it, it has been of great influence on certain philosophical systems. This problem concerns the nature of illusions, of dreams, and of hallucinations, and is stated in the question, Are, or are not, our dreams and especially the *things of which we dream* wholly "within our heads," wholly in our "dream-consciousness"? And yet, it may be asked, are not dream-objects quite real to us *while* we dream them. Then the further question arises, whether it might not be, that *everything* in the universe, stars and sun and planets, this earth and all that lives thereon, is but *a persistent dream* in which we all share. Here one might still further ask, whether *you* would not be only *my* dream-object, so that *I* would be *all,* and *all* would be in *me?* This position, that everything except *you* and *me* and *other human beings,* as *spirits* or *souls,* is a sort of dream in which we all share, with dream "effect" following dream "cause" with regularity and according to law, is Subjective Idealism. But what right, once thus started, to make exceptions? To be consistent must one not also grant that *all other human beings* are only one's own persistent dream? This consistent position is Solipsism.

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[8] This is done by, *e.g.*, Jacques Loeb in *Physiology of the Brain*, and in *The Mechanistic Conception of Life.*

[9] See Chaps. XXXIV.-XXXVIII.

But the instances of normal illusions also set a similar problem. For example, the rails of the railroad are parallel, but as we look down the track they appear to converge. Also, the stick that is straight appears bent, if it is immersed in the water. But can the rails actually be *both* parallel and *not* parallel, the stick be both straight and bent? Are not *parallel* and *not parallel*, straight and not-straight respectively *contradictories*, so that in each instance each characteristic must exist at a different place or *locus?* Much traditional philosophy and psychology have solved these problems by making the "parallelness" and the straightness in each case the *real* "objects," and by "putting" the contradictory entities, *i.e.*, the illusory appearances, *into some particular consciousness*, thus identifying *their esse* with their *percipi*.[10] For their existence consciousness is held to be necessary. Therefore, it is further asked, Is not consciousness necessary for the existence of *all* "things," even of all so-called real "things"? Could not they also be mere appearances and exist in some personal consciousness, or, if not this, then at least in some divine consciousness? This position is again Subjective Idealism, or, carried to its logical conclusion, Solipsism.

The reply to these arguments can be stated briefly, and, indeed, on the principle, that one cannot lift himself by his own boot-straps. If *some* "things" are concluded to exist only "in" consciousness, *because other* "things" do not, then it cannot be consistently inferred, that these *other* "things" also exist in consciousness. The scientific solution of the problem of these normal illusions,—if illusions they are—is one that cuts the very foundation from beneath that argument for idealism which is based on them. This scientific solution is, that the illusory appearances do not exist "in" consciousness at all, but are real parts of that same world of which the real objects are also parts. Rails and stick *by themselves* are respectively parallel and straight. But the *complex,* rails *and* light, has the characteristic of convergence, and the *complex,* stick *and* water *and* light, the characteristic of bentness. Each of these contradictory attributes has, indeed, a different *locus* from that of the original object, but this *locus* may quite as well be another part of the physical world *as* a part of a consciousness.

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[10] *E. g.*, by A. O. Lovejoy; see the references given in Chap. XLIII.

SECTION III

METHODS AND PROBLEMS OF METHOD

I. THINKING

CHAPTER XII

REASONING BY WORDS, AND THE PSYCHOLOGY OF THINKING

I. INTRODUCTORY

In this section there will be considered the various methods that are used in attempting to solve philosophical problems. But, since these methods present problems of their own, we shall have problems of method, in addition to problems of points of view, of ontology, cosmology, epistemology, and the like. The methods to be examined will, however, not be limited to those that *are* correct, but will also include those which, though unsound, have, nevertheless, been frequently employed to solve certain problems which have arisen in the development of certain historical systems of philosophy.

II. THE THINKING SITUATION [1]

It is an important, although rather obvious fact, that all philosophical systems, whatever their differences, must use words in their processes of reasoning, since they are argued about and defended, and are thus presented for our acceptance as true. This is the case even in such an extreme position as mysticism, where, it is claimed, intuition and ecstasy reveal certain facts which reason cannot apprehend. When rationally defended, even such a position is reasoned about by the use of words, and thus the possibility that *reason* can discover at least some facts is presupposed. The problem as to what is involved in reasoning by the use of words, or of *some kind* of symbols, is, therefore, a general problem of method that concerns all philosophical systems in one way or another, and all philosophizing to some degree.

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[1] Compare with the account that follows: E. B. LeRoy, *La Langue*, 1905; H. Odier, *Essai d'Analyse Psych. du Mechanisme du Langáge dans la Comprehension*, 1905; H. Steinthal, *Einleitung in die Psychologie und Sprachwissenschaft*, 1881; W. Wundt, *Sprachgeschichte und Sprachpsychologie*, 1901; B. Erdmann, *Psychologische Untersuchungen über das Lesen*, 1898; G. Wolff, *Psychologie des Erkennens*, 1897; A. Binet, *Psychology of Reasoning*, 1912; F. Brentano, *Psychologie vom empirischen Standpunkte;* R. S. Woodworth, " Non-Sensory Components of Sense Perception," *Jour. of Phil., Psych. and Scientific Methods*, Vol. IV.; also, " Imageless Thought," *Jour. of Phil., Psych., and Scientific Methods*, Vol. III., 1906; and " The Consciousness of Relation " in *Essays Philosophical and Psychological, in Honor of Wm. James*, 1908; James, *Principles of Psychology*, Vol. I., p. 243 ff.; J. R. Angell, " Thought and Imagery," *Phil. Review*,

Common also to all philosophizing is the method of examining the "world" about us by some mode of approach, *i.e.*, either by the senses, *or* by some *other* mode. But different individuals accept different methods of approach, and the regarding of anything as *fact* is made dependent on that which is antecedently regarded as the *correct approach.* For example, the mystic regards intuition as the one correct method, and so holds that *all-absorbing unity* which this approach reveals, to be *the* important fact, while the intellectualist finds that analysis and reasoning are correct approaches, and that plurality and differences are quite as much facts as is unity.

Thus, in all philosophizing and in all philosophical systems there are *two methods,* the one, that of reasoning by words and other symbols, the other, that of observing in some way, both of which are accepted and used, and freely allowed to supplement each other. Of these the former will be first considered, since it is that method to which we are of necessity committed in our endeavor to investigate philosophical problems, methods, and systems.

III. THE PSYCHOLOGY OF THINKING; SYMBOLS

Words are by themselves only physical objects, *i.e.*, they are either printed or written marks, or, as spoken words, waves of air. These objects are words in the usual sense by virtue of

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Vol. VI., 1897; E. B. Titchener, *Experimental Psychology of the Thought Processes*, 1909; W. B. Pillsbury, *The Psychology of Reasoning*, 1910; J. Dewey, *How We Think;* B. Erdmann, "Umrisse zur Psychologie des Denkens," in *Phil. Abh. Chr. Sigwart zu seinem 70ten Geburtstage*, 1900, pp. 3-40.

being *associated* with certain specific mental processes, namely, with those which reveal the objects or "things" that are experienced when these mental processes are taking place. The physical words are, then, symbols for these objects or "things." It results, that when one perceives or thinks of certain specific marks or sounds that are word-symbols, one also *tends* to be conscious of the objects for which the symbols stand, *i.e.*, to be conscious of their *meaning.* This "meaning" consciousness, therefore, and the consciousness of the words as such, become associated, and thereafter, *each* tends to "arouse" the consciousness of the other. But further, the consciousness of a meaning, once aroused, arouses the consciousness of other meanings, and so on, at the same time that the consciousness of the words for these "things" is aroused, and there then occurs a series of word-images, the earlier images suggesting later ones. Accordingly, when we *read* or *hear* words, these suggest or arouse the appropriate meanings, and when we think quietly, or speak, the meanings seem to come slightly ahead of the words, and to suggest them.

Three aspects, therefore, are to be distinguished in the situation presented by the use and meaning of words. There is (1) the psychological aspect, which concerns the consciousness both of the word-symbols and of the objects and meanings with which they are associated; (2) the grammatical aspect, and, (3) the logical aspect, which merges into the grammatical, and conversely. These last two aspects are, of course, also most intimately connected with the first aspect, *since logical and grammatical facts* are known and have word-symbols associated with them.

The psychological processes with which we are concerned are classified as follows: Consciousness, or psychic or mental process, is the *genus,* and its three main subdivisions are: cognition, emotion, and volition, or, using synonyms, knowing, feeling, and willing. The meaning of each of these is sufficiently well known to the reader not to demand a discussion. *Knowing may, however, be defined as awareness.*

Cognition is in turn classifiable into its *specific kinds,* namely, sense perception, memory, imagination, and conception, and there are, in turn, as many kinds of each of these processes as there are specifically different senses, namely, sight, hearing, "equilibrium," touch, taste, smell, and the "heat," "cold," "muscular," and "organic" senses. This means that, with different kinds of sense perception, also memory-, imagination-, and conception-processes can take place in terms of each sense, although vision, hearing, touch, and muscularity are the dominant senses.

There are also processes of self-perception, or of introspection, that do not take place through the medium of the special sense organs. In this process of self-perception we become aware that we *are* perceiving, remembering, imagining, conceiving, willing, having emotions, and the like. Thus self-perception also furnishes material or content for subsequent processes of memory, imagination, and reasoning.

This classification of cognitive processes means that all sorts of entities, such as *things*, qualities, events, and relations, can be perceived, remembered, imagined, conceived, judged, and reasoned about. Some of these entities are physical, others are mental, while *still others* belong to *neither* of these two classes. Among these *non-physical* and *non-mental* entities are terms, qualities, relations, and perhaps also events, *which our reason shows us would still be facts*, even if all physical and mental entities were annihilated. A good example of such entities, which may be called (non-existent) *subsistents*, are the *positive* integers, 1, 2, 3, $n-1$, n, $n+1$,—not these physical marks, of course,—*but that which these signs symbolize, and that which is presupposed, but not made by counting.*

Written, printed, and spoken words are used as symbols or signs by which to indicate both *specific individuals* and *specific classes* of individuals, and classes of these classes, and so on. To illustrate this, and at the same time to give examples of some of these *classes* of entities, the reader's *attention* may be *called* to the *fact* that he can now *experience*, by introspection, a series of (*existent*) *mental processes* as he visually *perceives* these very words (physical existents). Thus his experience is at least twofold. However, words or symbols that are used in *reasoning* can be known in any one of the several cognitive processes, and not alone in sense perception; *i.e.*, there are remembered, imagined, and conceived, as well as perceived words. Words read are visually *perceived*, and words heard are *perceived* in hearing. But *when we reason* in order to write or speak, we tend to formulate our thoughts in words that are *conceived*, though, *as we write or speak, and see and hear*, there are also perceived words. But any kind of a word can be associated with any particular object or class of objects that is brought to our knowledge in any way whatsoever. Thus we have words not only for what we perceive in sensation and in terms of sensation, but also for what is revealed in our reasoning processes and in our emotions and acts of will.

IV. GRAMMAR

The differences among the entities that we perceive, remember, imagine, and get at by reason, or become aware of emotionally, as in æsthetic and moral feeling, and the like, receive a certain recognition in the *grammatical* distinctions and differences of language. Thus, nouns for the most part symbolize *"things"* and qualities; verbs, prepositions, and conjunctions symbolize events and relations; and adjectives and adverbs, qualities or attributes. The grammatical structure of *sentences* also expresses and reveals to a certain extent the *relations* between and among the entities to which our judgments, as *psychological, knowing processes,* are directed. In general, grammatical differences correspond to *objective* characteristics of the entities that are symbolized by the words, and that are known in the judgment which is verbally formulated.

CHAPTER XIII

THE LOGICAL ASPECTS OF THINKING

INTERPRETATIONS OF THE NATURE OF LOGIC

We use our senses to perceive, we remember, we have emotions, and we describe what is thus revealed to us, but sometimes we do more than this. We *reason about* "things." It is a most important question, then, to ask, *What is it, when we reason, by* *virtue of which we are enabled to do this?* or, *Just what do we do when we reason?*

As at least a tentative answer to this *second* question it may be said, that *to reason is to infer,* or to learn from something that is known, something that was previously unknown. To reason may also mean *to systematize,* and to "put" many "things" together *consistently,* as is done, *e.g.,* in any science, though to do this seemingly demands reason in the former sense.

But the *first* question is more important for our purposes than the second, which concerns only the psychological character of reasoning. *What is it in or among the entities that we reason about that enables us to infer?* The answers given to this question have been both varied and involved. Among them *three* principal tendencies are distinguishable, namely, the *realistic,* the *psychological,* and the *pragmatic.* These are the three main views as to the nature of *logical principles and entities.* All three agree *that we reason* by using in some way the peculiar, interesting, and very important relation of *implication,* but they differ in their interpretation of the *nature and locus of this relation.*

I. THE REALISTIC VIEW OF LOGIC

According to the realistic view, *implication* is a relation that is *objective* in the sense that, although related to, it is independent of, the reasoning process that is, in part at least, an awareness of it. Just as there are relations of similarity, of difference, and of whole and part, so also, it is held, there are relations of implication, or of the non-causal, yet *necessary* connection between "things." By discovering and making use of these relations in specific instances, we discover *other* relations, and from certain entities, *other entities.*[1]

Just what all the typical situations are that present the relationship of implication, is difficult to determine, but the following is a simple illustration of one such situation: Among the entities that are discoverable in this universe of many entities are *relations,* as has already been emphasized. Instances of relations are "father of," "equal to," and "precedes." If, now, the terms that are related are symbolized by a, b, c, etc., then we can have the *relational complexes*, respectively, a the father of b, a equals b, and a precedes b. However, it would seem that none of these relations subsists without, in each case, *another* and *distinct relation* also subsisting. this other relation being *the inverse*, or what is sometimes called the *converse* of the original. But at the same time that this inverse relation is distinct from the original relation, it is also *necessitated* by it, though *not* in a causal, but in a *logical* manner. *This specific logical necessity is an instance of implication.* Thus, in the case of one of our examples, "father of" implies or necessitates the inverse relation, "child of," and these two relations are not identical. So also $a = b$ *implies* that $b = a$, and "a precedes b" *implies* that "b follows a." In general we may say that *every relation implies its inverse or converse.*[2]

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[1] See Chap. XLI.

This being so, we have a most interesting situation. The proposition just stated means that, with the original relation aRb given, there is *of necessity* the inverse relation, $b\breve{R}a$. But this means that *aRb and $b\breve{R}a$ are themselves related* both by implication and by "inverseness." Then, if the proposition above stated is correct, *each of these relations* also *implies its own inverse*. But this is precisely what we find. The *relation of implication* that subsists *in that aRb implies $b\breve{R}a$, itself implies* the inverse, namely, that "$b\breve{R}a$ implies aRb, *i.e.*, "aRb implies $b\breve{R}a$" itself implies "$b\breve{R}a$ implies aRb."

This situation need not be analyzed further for our purposes, for the analysis thus far made discloses the fact, both that the relation of implication subsists in the midst of, or side by side with, or *on the basis of, other relations,* perhaps of very specific ones, and also that it is itself a basis for still further relations.

Another situation in which we find the relation of implication *cosubsisting* with other relations is one that is identical with the orthodox categorical syllogism of the Aristotelian formal logic.[3]

The traditional logic of Aristotle is essentially the logic of classes. A class subsists by virtue of the relation of *similarity,* together with, in most cases, that of difference among entities, and quite *independently of their order*. This is quite evident when we consider simple examples such as the two classes, *men* and *vertebrates*. Any one individual of the class is in the relation to the class of being "*a member of*" it. But classes are themselves related by complete, partial, and negative inclusion (*i.e.*, exclusion). Thus, to illustrate, all *men* are *included in* the larger class *vertebrates*, but the class *vertebrates* is only *partially included* in the class *men*, and, finally, the whole class *vertebrates* is *excluded* from the whole class *triangles*. Such relations of *similarity, difference, member of,* and *inclusion,* positive and negative, between entities *are,* now, *propositions,* or *objective "state of affairs,"* and the knowledge of such relational complexes is in each case a *judgment*.

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[2] Cf. Chap. XXVII.

[3] Cf. Chap. XIV.

One and the same class, further, can be in *one* relation to *one* class, and in *another* relation to another class. Thus the class *vertebrates* includes the class *men,* but is included in the class *living beings*. With this specific state of affairs subsisting, there also subsists *of necessity* the relation of inclusion of the class, *men,* by the class, *animals*. This relation is *numerically distinct* from the other two relations of inclusion, namely, of *men* in *vertebrates,* and of *vertebrates* in *animals,* yet it *is related to them*. It is, first, *similar* to, and, second, *implied* by them. Thus we have another case of the relation of implication "resting on" other relations between terms (in this case those of inclusion), and of still another relation or relational complex resting on *it*. In the example just given, if we let S symbolize the class (all) *men,* M the class (all) *vertebrates,* P the class (all) *living beings,* $<$ the relation "*included in,*" and $)$ the relation of implication, then we have $S < M$ and $M < P$, $)$ $S < P$. *This relational situation* holds good for any classes, S, M, P, that are related to one another as are the classes, *men, vertebrates,* and *animals.*

In a very similar way the relation of complete exclusion of a class S from a class P is implied by the two relations (1) of the complete inclusion of the class S by M, and (2) of the complete exclusion of M from P. Thus, to illustrate, if all *propositions* are included in the class of *analyzable entities,* and all *analyzable entities* are completely *excluded* from the class of *simple entities,* it is *implied,* that all propositions are *excluded* from the class of simple entities.

Other instances of the relation of inclusion, complete, partial, or negative, between two classes "at a time," are discoverable, and the several relational complexes that thereby subsist, *taken in pairs as premises together with* the propositions which they imply, *make up* the several *moods* of the *four figures* of the Aristotelian categorical syllogism. The detailed examination of these moods and figures may be found in any text-book on logic, and need not be presented here.

There are a number of other, perhaps *many* other situations in which the relation of implication is present. But the instances given will, it is hoped, make clear what the *realistic* position is in regard to the problem of *what it is* (in the situation reasoned about) that enables us to reason, or *that we discover* and become aware of when we reason. The solution of this problem is, that, just as there are "things," qualities, events, and such relations as *membership in*, *similarity*, and *inclusion*, *so also is there the relation of implication*, which, if the former entities are objective and discoverable, is *also* of this same character.[4]

There are many further questions, some of them of extreme interest, concerning the problem of implication. Thus, if certain relations are implied by others, which we find to be the case, then it may be asked, whether *implication* is itself *implied*, or whether it *merely occurs* as one among many relations, *i.e.*, as one that accompanies, but is not necessitated by other relations. The writer is strongly convinced that the second alternative is the case.

Although all the circumstances that surround and perhaps condition implication may be difficult to discover, nevertheless the realist holds that to reason correctly, even in the study of the reasoning situation itself, is to discover (objective) relations of implication that are independent of the reasoning process, though related to it. For example, there *are individual*

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[4] The problem of the nature of implication, the circumstances of its occurrence, etc., have not as yet been given much attention in philosophical investigation, although Russell has dealt with it somewhat in his *Principles of Mathematics*. The objective view here presented agrees, *e.g.*, with that of G. E. Moore in his article, "The Nature of Judgment," *Mind*, N. S., Vol. VIII., p. 177 ff., and is accepted, I believe, by all realists. Cf., also, on the realistic interpretation of logic and a criticism of the psychological and pragmatic tendencies, Husserl, *Logische Untersuchungen*, especially Vol. I., 1900, and Vol. II., 1901.

"things," that, through the relations of similarity and difference, form distinct classes. Then there *are* also the objective states of affairs of both *similarity* and *difference*. But in turn there *are* classes that *are* related to one another by inclusion, *i.e.*, if A, B, and C are classes, and $<$ symbolizes the relation of inclusion, $A < B$, and $B < C$. Then, discovering and following the "threads" of implication, we discover that $A < C$. This is typical of that situation which is present when we reason by what is called the categorical syllogism.

The categorical syllogism, however, is not the only technical method of reasoning. There are also other methods, which will be presented later. Yet in regard to all of them the realistic position is the same. Not only are *individual* "things" independent of knowing, but *relations* also are, not excepting those relations of implication which must be discovered when we reason *and* reason correctly, and by the discovery of which we are enabled to ascertain from certain facts *other* facts that are *necessitated* by the facts from which we started.

Indeed it is precisely this objective point of view that is at least tacitly accepted by every philosopher when he *reasons in order to philosophize.* Every philosopher aims to arrive at or to discover "large" general facts or *states of affairs* that are quite independent of his own or anybody else's knowing processes; and in presenting his philosophy for acceptance, he tacitly assumes that he has succeeded. *In this respect every philosophy is realistic.*

Reason may not be the only "method" by which facts are revealed. Sense perception, memory, emotion, and intuition must also be admitted to be such avenues of approach. But reason alone is that method by which these other methods can be *examined,* and a *conclusion* as to their reliability and character be obtained. Also it is reason alone that can thus examine *itself.* Reason is, then, the court of last resort. Indeed it is accepted as such even by those philosophers who write books in advocacy of anti-rational positions. Thus, *e.g.*, the *mysticism* of a philosopher like Bergson can *be rationally supported* only by *intellectual* methods.

The foregoing analysis presents the realistic view of that situation which is involved in any attempt *to reason and to* *philosophize by the use of words.* Words are the conventional instrument for *this* thinking, and for testing its correctness by communication with others. But that for which certain words and phrases are the signs is not the concrete individuals, nor the consciousness of these, but the various and diverse *states of affairs* that hold of these individuals. Certain of these states of affairs are logical, or involve logical entities, including implication, and when these are discovered, the way is clear to discover other "things" or entities.

II. THE PSYCHOLOGIZING TENDENCY

The realistic position, that logical entities are objective and independent of reasoning processes is, however, not accepted by every one. It is certainly not the traditional view.

The traditional logic is, as we have seen, the logic of classes, of *things*, and of qualities. In it the paramount *"principles"* are those of identity and of contradiction, and these are made "laws of thought," or *psychological* and subjective principles. To make this statement clear, let us consider, *e.g.*, the proposition, *a stone is hard, i.e., all stones are hard.* But there are also other hard things than stones. Our proposition would seem to mean, then, that a certain class, *stones*, are, as a whole, included in, or identical with a certain part of, a larger class, *hard things.* In both cases, now, the *principle of identity* appears. There is an identity of "extension" between stones and a certain specific part of the class, hard things, and, also, hardness is (identical with) a quality of stones.

Now in accordance with the teachings of the traditional logic it is impossible to reason without *presupposing and using the principle of identity* in *both* of these senses. Thus, whether we start with the proposition, "hard things are not mental," or with "hard things are physical," and *from these and the proposition,* "stones are hard things," conclude that stones are not mental, but physical, we are presupposing and using identity in both of the senses just mentioned.

Yet that the principle of identity is not only presupposed in such instances but also that it is a *law of our thinking, i.e.,* that it is a *psychological* and *subjective* law, is the traditional logical doctrine that is reached by the following argument, used either implicitly or explictly.

Thinking is held to be specifically different from other entities, or to be *sui genesis* in at least some aspects, and thus to have a "nature" peculiar to itself. The proposition is then maintained as *self-evident,* that thinking cannot act in contradiction to this "nature," but must act in agreement with it. A similar argument could, of course, be made for almost any entity, *e.g.,* for electricity. The next question accordingly is, what those laws are *which, when* thinking acts in accordance with them, "fulfil" *and* reveal *its nature?* This question is answered by finding *what* laws thinking *must* follow, whether it will or no, since, if it can be shown that there are certain laws that thinking *must* follow, *this necessity* can be accounted for by the hypothesis, that such laws are *resident* in the thinking process itself, and "make up" that nature in agreement with which thinking must act.

But, *what laws* thinking *must* follow is ascertained by finding *what laws* or principles are *such* either that *their opposite* cannot be conceived or thought, *or* that they are *presupposed* by their own (attempted) denial.[5] By applying these tests, the conclusion is reached, that such laws *must* be used, when we think, indeed even when we *endeavor* to think without them, *because they are laws of thinking.*

This is the argument that is used, either tacitly or explicitly, in the traditional logic in order to show that not only the law of *identity,* but also the laws of *contradiction* and of *excluded middle* are "laws of thought," *i.e.,* laws of a *psychological process.*

We may now examine the application of this argument to each of these laws, at the same time that we give each law a formulation.

The Law of Identity. Even in the endeavor to *think* without it, *the principle* is used, (1) that each entity is identical with itself, *i.e.,* that it is *that* particular entity and *not* any other, and (2) that it retains its peculiar character and its individuality.

The Law of Contradiction. Even in the attempt to *think* without it, *the principle* is used (1) that each entity cannot be both that entity and *not* that entity, and (2) that it cannot both belong and *not* belong to a specific class, either as an individual member or as itself a class. The first formulation of the principle is but a restatement of the law of identity as the principle of the *individuality* of each entity, even where, as in the *class* of the points of space, all individuals seem to be qualitatively alike. The principle, in this sense, does not mean, however, that one and the same entity cannot be in *two* relational complexes at once. For that an entity can have such a dual relationship is exemplified by a point, which, as the apex of an angle, is *a member* of the two lines that form the angle. The principle of contradiction may be illustrated by that proposition which concerns it, namely, that it itself cannot *be both a (psychological) law of thought and not such a law.*

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[5] See Chap. XV., IV., 5, 6, 7.

The Law of Excluded Middle. Even in the endeavor to think without it, *the principle* is used (1) that each entity, either as an individual or as a class, must belong either to a class, *A*, or to that contradictory class, *non-A*, which logically includes everything that the other class does not include. Thus, any logical principle must be *either* a (psychological) law of thought *or not* such a law.

This position that certain logical principles are laws of thought, or of mind, or of psychical processes, is well called "the psychologizing tendency."[6] Its consistent outcome is, on the one hand, that *all* logical principles are *subjective* or mental, and, on the other hand, that that which shall be regarded as *logical* is determined by finding *what principles* (1) are presupposed by the very endeavor to think without them, or (2) are of such a character that their opposites cannot be conceived, or (3) are, perhaps, also self-evident. Historically, as this tendency has developed, a numerically single "transcendental ego," and also such *"concepts"* as *quantity, quality, relation, causation, substance and attribute, possibility, actuality, necessity, unity, plurality, totality, positive, negative,* and even *time* and *space,* have been "found" to be *such* logical principles. This is notably the case in the Kantian philosophy and tradition, in which some of these "concepts" are called *"categories."*

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[6] See Husserl, *op. cit.*, for a criticism of this tendency.

The argument has been, that one *must* think in accordance with some one, or a number of these; that the very attempt not to do so but reveals the compulsion to do it; and, therefore, that this compulsion is to be explained alone by the hypothesis, that these "concepts" are *principles of thinking.*[7]

The sharp difference between this psychologizing tendency and the opposed realistic position may be brought out by considering certain consequences of the former position. The critical examination of the traditional development in philosophy shows, as we have already found, that there has been a strong tendency to use the principle, that *all* entities, because they are related in any way, are *also causally* related. This principle is, therefore, applied to the *fact* of the relation between *knowing* and that which is known. If, now, this *knowing* has a *nature that consists of laws of thought,* categories, and the like, *then* those ways in which knowing will *affect* the entities that are known will be *just these laws and categories.* It follows, that, given an indeterminate "something," an *x, to be known,* this *x* will, *as known,* bear the "stamp" of these laws and categories, and any attempt to know an entity without this "stamp" will be *self-defeating.*

In the psychologizing tendency, therefore, logical principles and entities are "made" subjective or psychical entities that are *attributes of* and that *inhere in* the knowing mind, and that also are wholly absent from the realm of unknown *x's,* but that nevertheless *appear* to be in the realm of *known* "things" because they are "read into" that realm by the *causal* influence of the *knowing* on that which is (to be) known. This philosophy is called Phenomenalism. Concerning its logical genesis it is only fair to say that the assumption, that there is a *causal* influence of *knowing* on the thing known, while it is made, perhaps, quite unawares, is due to the influence of the tradition that comes from Aristotle.

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[7] Aristotle himself would seem to have accepted the *realistic* interpretation of the proposition and the syllogism and, also, of logic. In the *assertion* of a proposition he recognized two aspects, a subjective and an objective. In the subjective there is revealed the speaker's belief or disbelief; in the objective the "state of affairs" to which such belief or disbelief corresponds. See *De Interpretatione,* p. 23, a 32; p. 24, b 1; p. 17, a 22. The *later* subjectivistic and psychological view seems to have grown up in the *tradition* because of some lack of clearness in Aristotle's own mind, and because of the influence of the "thing" and "substance concepts." *This* view seems to have been held in modern philosophy by Descartes, Spinoza, Leibniz, Kant, Fichte, Hegel, and by most writers of current text-books on logic. The germs of opposition to it are found in Locke's *Sensationalism and Empiricism,* in Berkeley's *Nominalism,* and in Hume's *Positivism;* and these "germs" came to their full development in Pragmatism and Realism. Cf. the later chapters on these positions.

The general realistic criticism of this whole position is, that, if it is a condition of genuine knowing that *"things as they are"* should be got at, *then* (1) the act of knowing cannot alter the "thing" known, and (2) *all* categories and logical principles must subsist, or be facts, in and among the entities known, whether or not these categories and principles are present in the knowing process itself.[8] Indeed, even granting that there are laws or principles of the psychological process of thinking, which laws this process follows, nevertheless these same principles might also hold of other entities, such as physical objects and events, numbers and space and time; or, it might be, that certain logical principles hold *only* of these other "things," and that, accordingly, reason *must* follow these principles because, in order to give genuine knowledge, reason must conform to "things." In fact, *that* reason must so conform, and *not* project itself into and *alter* those entities that are known by its means, is the very position that is *tacitly assumed* by the adherent of the psychologizing tendency, when he *reasons about* the character of reason in general, in order thereby to discover the *facts* concerning this.[9]

III. THE PRAGMATIC TENDENCY

The criticism just made of the psychologizing tendency can also, with equal justification, be directed against that tendency which has recently received the name of *pragmatism.*

The pragmatist sets out to study the function and development of knowledge, and, within this field, the nature of logic. He solves the problem by discovering certain "states of affairs" both by reasoning and by other methods, and, finally, by systematizing and unifying his results. But in doing all this he tacitly grants that certain states of affairs *imply* others, and that, in the whole complex state of affairs which *his own pragmatic theory* presents, implication, identity, unity, consistency, and the like, are quite *objective* in the sense that they are *not dependent* on their being known, and also are *not invented* in the sense that that part of the human race which is European in its culture has unconsciously *contrived* certain means of thinking, or has formed the *habit* of thinking in certain ways.

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[8] See Chap. II.

[9] Prominent names among recent writers who take the psychologizing position in logic are: Sigwart, Bosanquet, Ueberweg, Wundt, Creighton, Hibben.

This is the position that the pragmatist takes toward his *own* theory, but *not* that for which he contends *explicitly* within that theory itself. For, according to the detailed theory of pragmatism, all logic is either a mere invention, an intellectual instrument and machine, *or* a custom, a belief, that has developed in the tradition,[10] but in either case something that is *useful* as an adaptation to man's environment.[11] Its seeming *necessary* character is accounted for by the argument, that we cannot get out of the tradition in which we are reared, because the very attempt to do this is itself imbedded in the tradition. This implies that, had the tradition or the original invention been different, our logic would also be different. But it is also argued, that, since the only world which we know is one that is affected by being known and, therefore, by the "nature" of the knowing, our present (known) world is *made* in part by that very logic which forms part of the tradition. Originally, and even now, perhaps, there is another world, amorphous and plastic and quite different from our known world. And, had another logic been invented and grown up as a racial habit, then would all mankind be thinking in a world quite different from that in which they now think and live.[12]

This is the pragmatic view of the nature of logic as a method or as a set of principles by which we reason and investigate situations, even those that furnish pragmatism itself with its problems. Clearly this view has many resemblances to the psychologizing tendency. The latter regards logical principles as laws of certain psychological processes; the former interprets these principles merely as something which, like word-symbols, beliefs, and superstitions, are arbitrary and contingent, and are handed down in the general stream of *social transmission* from generation to generation. This inheritance is conditioned chiefly by the psychological process of imitation, while certain principles have survived and have been transmitted only because of their *usefulness.* This *usefulness is,* indeed, their *truth* even as it is the truth also of every principle, hypothesis, law, and theory that survives and persists.

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[10] *E.g.*, James, *Pragmatism*, Chap. V., and Schiller, *Riddles of the Sphinx*, Chap. V., §§ 9-12.

[11] Dewey, *Studies in Logical Theory*, 1903, and James and Schiller, *ibid.*

[12] Schiller's *Humanism*, discussed by James in all four of his later volumes, *Pragmatism*, *Meaning of Truth*, *Pluralistic Universe*, and *Some Problems of Philosophy*.

In further criticism of this pragmatic view, it suffices to comment that, if logic is held to evolve and to be a mere adaptation together with other "things" like eyes and hands and nervous systems, and perhaps atoms and worlds and stars, nevertheless *everything cannot evolve.* The *principles of evolution* cannot themselves be *of* this process. It is quite pertinent to ask, then, whether *these* principles may not themselves be in part *logical.* But if they are, then the *universality* of the pragmatic theory is invalidated, and we must conclude that at least *not all* logic, and, indeed, perhaps *no* logical principle is merely an evolving racial instrument and habit.

II. THE TRADITIONAL TECHNICAL METHODS OF REASONING[1]

CHAPTER XIV

THE CATEGORICAL SYLLOGISM

It is not proposed to give in this and succeeding chapters a detailed account of all the technical methods of reasoning, but to present only certain typical methods. All the methods presented will, however, be understood to be open to each of the three interpretations just discussed, although the writer holds the realistic interpretation to be alone the correct one.

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[1] A complete presentation of the traditional methods will be found in almost any text-book on Logic as well as in such larger treatises as Sigwart's and Bosanquet's.

One very common method of reasoning is by what is known as the *categorical syllogism.* This method should be presented and analyzed, since it is one by which much philosophizing is done, as is illustrated by any of the usual arguments for, or defenses of, philosophical positions. In making this presentation the distinctions discovered in the previous analysis of *the thinking situation* should be borne in mind.

A typical situation in which *a categorical syllogism subsists* is illustrated by that *complex state of affairs* in which (1) the class *plants* is included (related by *complete inclusion*) in the larger class *living beings,* and (2) *roses* are included in the class *plants,* so that (3) they are *also of necessity* included in the class *living beings.* In this situation there are present (1) *relations of similarity,* by virtue of which groups of individuals form respectively the classes, *roses, plants,* and *living beings,* denoted in each case by the *concept of the class,* namely, *rose, plant,* and *living being,* respectively. (2) Each member of each class is related to that class as "*a member of*" it, and *the class as a whole, i.e.,* the state of similarity of its members, is a *fact* that is different and distinct from the fact of each individual member.

Each of the relational complexes involved in this situation is a proposition, but that complex to which we elect to give our attention at this point is that which is generated (3) by the relation of the inclusion of one class in another, *e.g.,* of the class, *roses,* in the class, *plants.*

One type of proposition is, therefore, that *state of affairs* which is identical with *the relationship of inclusion of one class in another.*

But even as classes, and so, also, concepts or *states of affairs* that hold of individuals, are related, and, as related, are identical with one type of proposition, so, in turn, (4) are these propositions themselves related; or, as the situation may also be stated, one class may be related to another class *as including it,* and to still another class *as being included by it.* (5) Such a relational complex we will define as a *specific type of the categorical syllogism.* Thus we have, in the case of the example given, using the sign $<$ to mean "are included in," *roses* $<$ *plants* $<$ *living beings.* But *roses* $<$ *plants,* and *plants* $<$ *living beings*, are two *distinct* states of affairs. They are each a proposition. *Yet together they necessitate or imply a third distinct proposition*; namely, that *roses* $<$ *living beings*.

A still further analysis can be made of this specific, yet *typical* situation. The printed words, "rose," "plant," and "living being" are symbols or signs that stand for concepts, the concept in each case being *the objective state of affairs* that holds of all those individual things that *share* in certain specific characteristics. Thus, *e.g.*, there is *something* that "holds good" of a certain group of objects by virtue of which *all* are roses. This *something, this state of affairs*, is, however, *not itself a rose*, but it is a *concept that consists of a number of characteristics* which are familiar to all, and which are used when we recognize a flower *as a rose*. These characteristics form the *connotation* or *intension* of the concept, *rose; rose* connotes them. On the other hand, the individuals of which the concept holds form its *denotation* or *extension*. In general, the fewer the characteristics that make up the *connotation*, the greater is the denotation of a concept, and conversely. Thus "rose" has a greater connotation, but a smaller denotation than has "flower"; "flower" a narrower connotation and a wider denotation than "rose."

A concept *denotes* the individuals of the class of which it holds, *whether we are conscious* of those individuals or not. It must do this as *that state of affairs* which *holds* of these individuals, whether we are aware of them or not. Therefore, in order to reason about individuals, once we have discovered the concept for them, *we need deal only with the concept* with its connation, *and* with its relations to other concepts. In some cases we must first discover the individuals *specifically*, before we can get at the concepts for them. This we do in *induction*. But in other cases we find *the concept first*, thus to discover that there *are* certain classes of individuals, although, in some instances, we can never perceive (in any sense) *any particular one of them*. This is the case, *e.g.*, in dealing with the points of space. Such a discovery of a new concept may be made by discovering *what* other, related concepts *imply*—a procedure that is most important for science and philosophy, since, by it, we discover certain classes of individuals *no one of which* we can ever see, touch, or get at by any of the senses. For example, it is in this way that we are forced to deal with everything that existed or took place *before* we who now live were alive.

In accordance with our previous analysis a distinction is to be made between (1) the words or *signs,* (2) the *percepts* of these signs, (3) the *states of affairs* or objective concepts holding good of classes of individuals, (4) these *individuals* themselves, and the *consciousness* both (5) of these *individuals* and (6) of the *objective concepts.* We are not always aware of these distinctions while we are reasoning, but to fail to distinguish is not to do away with distinctnesses. As we reason we can give our attention either to the concepts or to the individuals, but to the reasoning it makes no difference, in most cases, which we do. Thus, whether we say "a rose is a flower," or "roses are flowers" is, for reasoning, a matter of indifference.

The example just analyzed, namely, the complex *state of affairs,* that roses $<$ plants, plants $<$ living beings, *implies* or necessitates, roses $<$ living beings, is typical of a class of specific situations or relational complexes, called *categorical syllogisms,* in which the relation of implication is present. From many such cases that have been examined, the generalization is made, that *wherever* there are similar situations, there, also, will *implication and the complex terms between which it holds be present.*

Some of the essential characteristics of these situations are formulated in the text-books as the *rules* of the categorical syllogism, but they are to be regarded as *rules for thinking* only because thinking must conform to the structure of reality in order to issue in knowledge.

One of these rules or principles concerns that which is evident in our example, namely, that while *roses* possess certain specific properties that are not possessed by all *flowers,* nevertheless they are included in this larger class. Accordingly, if something is a fact concerning roses, it is not implied, and *should not* be inferred, that that something is also a fact for *all* flowers. In general, if something holds of *part* of a class, that "something" cannot validly be inferred to hold for the *whole* of that class. Also, that which holds of a smaller class does not of necessity hold of the larger class of which the smaller is a part.

It *might* hold, but, also, it might not. When we infer, that which we infer should be implied or *necessitated.* Conversely, that which is necessitated must be inferred, *if we are to infer, and infer correctly.*

That which is necessitated by a proposition or by propositions of the *type* we are considering depends upon the *objective* circumstance, whether *some or all* of the individuals of a class are involved in the specific relationship of *inclusion,* complete, partial, or negative, between two classes. Thus, in the proposition, *Roses are flowering plants,* while *all* roses are involved in the relationship asserted, it is only *some* flowering plants, namely, those that are roses, that are also involved. Therefore the *converse* proposition or relational complex that is *implied* by the original one is only that *Some* (not *all*) *flowering plants are roses.* However, in the proposition, *No men are fishes,* or its equivalent, *All men are not fishes,* both *all* men and *all* fishes are involved in the relationship of complete negative inclusion, *i.e.,* of complete exclusion. The converse proposition that is *implied* is, accordingly, *No fishes are men.* But, as different from this example, in the proposition, *Some triangles are symmetrical figures,* neither all triangles nor all symmetrical figures are involved in the relationship, so that the converse proposition (that is) *implied* is, *Some symmetrical figures are (some) triangles.*

However, in the case of the proposition just given, it is *not* implied that *All triangles are symmetrical figures,* though by the proposition, that *All roses are flowering plants,* it is implied, that *Some roses also belong to this larger class.* Likewise the proposition, *No men are fishes,* implies that *Some men are not fishes.* But, as different from this, the proposition that *Some Europeans are not Frenchmen* does *not* imply that *No Europeans are Frenchmen.*

These examples serve to illustrate *an important principle,* which is, that *the relationship of the whole of a class, either by inclusion, or by exclusion, to another class, necessitates the same relationship for some of the individuals of that class; but that, conversely, the relationship of part of a class, either by inclusion or by exclusion, to another class, does not necessitate the same relationship for all the individuals of that class.*

This is but another formulation of the celebrated Aristotelian axiom known as the *dictum de omni et nullo*, which may also be stated in the form that *Whatever is predicated of a term distributed, whether affirmatively or negatively, may be predicated in like manner of everything contained under it.*

In explanation of this formulation it may be said that a term is *distributed* if *all* the individuals which that term denotes are involved in *any specific relationship* either of *inclusion* or of *exclusion.*

Not to observe this *dictum, i.e.*, to distribute, in the conclusion, as the proposition that is inferred, if not implied, *a term that is not distributed in the premises,* is to commit the technical fallacies either of *illicit major* or of *illicit minor.*

However, if the *dictum de omni et nullo* is a principle that must be followed in those situations where our reasoning concerns relations of inclusion and exclusion, it is, nevertheless, *not* a principle *that itself generates that relational complex* which *is* the syllogism. Rather this complex *subsists* by virtue of that twofold relation which a *"middle term"* bears to two other terms, *provided, also, all* the individuals denoted by this middle term are involved in one *or* the other of these two relationships. This specific condition is usually stated in the form, that *the middle term must be distributed once at least.* But it may also be given the formulation that *a syllogism subsists* (1) if there is a class *M* which is related by inclusion or by exclusion, partial or complete, to each of two other classes, *S* and *P,* so that there is the complex, *S R M R P,* and so that *all* the individuals of the class *M* are involved *either* in its relation to *S or* in its relation to *P.* If *S R M R P* is the situation or *state of affairs* in which *M* is distributed once, then this complex *implies* the complex, or proposition, *S R P.* However, in endeavoring to *discover* this implication in any specific case, *we must observe* the *dictum de omni et nullo; i.e., S,* the subject, and *P,* the predicate, must not be distributed in the conclusion unless they are distributed in the complex, *S R M R P, i.e.*, respectively in the *major premise, M R P,* and in the *minor premise, S R M.*

The syllogism consists in the implication of a proposition, *S R P,* as conclusion, by two propositions as premises. But, since every proposition implies its inverse, or converse, there may be, *as a major premise, either M R P, or P R M, and, as a minor premise, either S R M, or M R S.* The several combinations of these four propositional forms give what are technically called the *four figures* of the syllogism. Thus *M R P, S R M, S R P,* is the first figure; *P R M, S R M, S R P,* the second figure; *M R P, M R S, S R P,* the third; and *P R M, M R S, S R P,* the fourth.

But further, since the relation, *R,* may be that of inclusion or of exclusion, partial or complete, between the two terms of each premise, there are the several so-called *moods,* which consist of *any two* of the *four kinds* of propositions *subsisting as premises, and* of *any one* of these four kinds subsisting as *conclusion.* These four kinds or types of propositions are: The *universal affirmative,* All *x's* are *y's,* A; the *universal negative,* No *x's* are *y's,* E; the *particular affirmative,* Some *x's* are *y's,* I; the *particular negative,* Some *x's* are not *y's,* O.

Universal propositions distribute their subjects, negative propositions their predicates, as do also *exclusive* propositions of the type, only *x's* are *y's.*

Although the text-books on logic present a list of the several *valid* as distinct from the *invalid* moods of the four figures, such a presentation and the committing of it to memory are both quite superfluous, if only the following principles are observed in using the categorical syllogism: (1) The middle term must be distributed at least once. (2) No term may be used distributively in the conclusion, if it is not distributed in the premise in which it occurs; it should not be so used for the simple reason, that it is *not so implied; i.e.,* "some" does not imply "all," nor does "some not" imply "none." (3) Two negative premises give no conclusion, for the exclusion of the whole or of part of two classes from the whole of the third class *does not imply* the exclusion of those two classes from each other; they may be so excluded, but, also, they *may not.* (4) The middle term must be the *same* in the two premises; or, stated negatively, one must guard against an *apparent* constancy in the meaning of the middle term, while, nevertheless, a change is introduced through the use of ambiguous words and phrases. This rule of procedure also applies *both to the minor term,* as it appears in the conclusion as *subject,* and also in that *premise* in which it occurs, namely, the minor premise, ***and to the major term,*** as it occurs as the predicate of the conclusion and in that premise which is made the ***major*** premise by its presence. Briefly, it is the ***same terms,*** ***S*** and ***P,*** that occur in the complex, ***S R M R P,*** and in the conclusion, ***S R P,*** that is ***implied*** by this.

As illustrative of ***violations*** of these four rules, the following examples may be given:

Illustrating false syllogisms in which the ***middle term is not distributed:***—

I Some symmetrical figures are triangles.
A All rectangles are symmetrical figures. ✓
A Therefore all rectangles are triangles.

Illustrating false syllogisms that employ ***two negative premises:***—

E No true proposition is dependent on being proved.
E No postulate of geometry is dependent on being proved.
E Therefore no postulate of geometry is a true proposition.

Illustrating false syllogisms in which the major term is distributed in the conclusion, but not in the premise in which it occurs:—

A All structures of living beings are "things" that evolve.
E No mineral is a structure of living beings.
E Therefore no mineral is a "thing" that evolves.

Illustrating false syllogisms in which both the ***middle term and the major shift in meaning:***—

A All that perceives is mind.
A The existence of objects consists in being perceived.
A Therefore the existence of objects depends on mind.

CHAPTER XV

THE TRUTH OF PREMISES

I. THE REGRESS OF PREMISES

In the *process of reasoning* by means of the categorical syllogism, as well as by syllogisms of other types, one can distinguish *the formal correctness* of the *process* from the *"material" truth* of the premises and the conclusion. The reasoning process is formally correct, if, in the case of the categorical syllogism, it conforms to some one of the several situations determined by the principles just laid down. But formal correctness is not of itself a guarantee of material truth. However, leaving undetermined at this point what the nature of "material truth" is, but distinguishing it only from "formal correctness," it is clear that there are the following types or variations of *reasoning processes:* (1) the syllogism *formally correct,* and also both premises and conclusion *materially true;* (2) the syllogism *formally correct,* but premises and conclusion *materially false;* (3) both the syllogism (?) *formally incorrect,* and the premises and conclusion *materially false;* (4) the syllogism (?) *formally incorrect,* but premises and conclusion *materially true* as propositions, although not so related as to form a syllogism.

The last three "variations" are both interesting and important, yet it is with the first type that we are here most concerned. For the *desideratum* is, *when* we reason by means of the categorical syllogism, that *both* our reasoning process should be formally correct, *and* our conclusion be materially true.

The formal correctness of the reasoning process seems, however, to be relatively easy to obtain, or to certify. To do this one need only observe the *rules* for correct formal reasoning, such as those rules that have just been presented for the categorical syllogism. But a more difficult problem is that of *making certain of the material truth* of the propositions that appear as premises, or as conclusion.

Although, now, there are a number of different interpretations, by the several philosophical positions, of the nature of truth, these can be neglected at this point, *since no position fails to recognize truth (and error) in some sense.* Accordingly, without defining truth, it may be said that, in the formally valid categorical syllogism, the conclusion is materially true, *if* the *premises* are materially true. But the premises are, like the conclusion, *propositions.* Accordingly, *the problem of getting a materially true conclusion becomes that of getting two materially true premises, and of again finding, if possible, two materially true premises that in turn imply each of these premises.* However, *these* "premises of premises" in turn "rest on" and presuppose others "still further back," *and so on, indefinitely. What, then, is the outcome of this repeated presupposition of premises?* Is there an infinite series of premises which it is quite impossible to complete, so that the best one can do is to plunge *in medias res* and *boldly assert certain premises?* This might be done either on the ground that, although not actually inferred deductively from others, these premises might, nevertheless, be materially true, *or* on the ground, that there is a "stopping place" where certain propositions *imply, but are not implied.* But it may also be asked, if there are not other *methods* of *establishing* premises than by means of the categorical syllogism, or, finally, if *all three* of these suggestions might not conform to fact? May not *implication* be limited in its range, so that *certain propositions* are (1) *consistent* with other propositions, but not implied by them, and, therefore, are (2) deductive "starting-places," and must, accordingly, be discovered *non-deductively?* To the answering of these inquiries we now turn.

II. COMMON SENSE AND THE SOCIAL TRADITION

The *physiological* transmission of structural and functional characters is not the only kind of heredity. There is also a *psychological* inheritance through imitation and by precepts, and the like, from all who have contributed to that whole social tradition in philosophy, religion, literature, art, science, and common sense into which each one of us is born. It is in this way that we obtain a mass of general knowledge to be used as *premises* from which to reason, as is illustrated by our common law, our system of morals, and our common sense. Such survivals are based on a method which in the main conforms to the canons of correct observation, analysis, and generalization.

This method is, broadly speaking, *induction,* practised informally, uncritically, unconsciously, almost instinctively.

III. INDUCTION[1]

So long as men relied chiefly upon a tradition that was rooted in uncritical observation and generalization, comparatively little that was new was discoverable. Yet it was in this tradition that men lived until the realization came that the secrets of nature were beneath the surface, and that, if they were to be revealed, nature must be analyzed by a method more penetrating and more discriminating. The time came, first at spasmodic intervals, but later more continuously, when, by carefully conducted experiments, the aspects of nature were isolated and their relations to one another ascertained. At the same time it was fair and natural to suppose that there were *other,* indeed, *many other* instances of these "things" that were thus examined. But *all* of these instances could not be observed, *e.g.,* either because they were too numerous or too remote, or because they were in the past or in the future. Yet the conviction was present, that nature was *orderly,* that it acted *in accordance with law,* that it had *uniformity,* and that the orderliness, the law, the uniformities were revealed by the few cases examined with care and by experiment. limits

It was in this manner that, *e.g.,* Galileo (1564-1642) discovered that the velocity of bodies falling to the earth increases with the time,—at that rate, namely, which is given by multiplying the time-interval taken to fall a definite distance by this same time-interval, *i.e.,* by the time squared. Galileo made his observations on bodies which he either let fall from different heights on the leaning tower of Pisa, or rolled down different distances on an inclined plane. From his observations, measurements, and analysis of these motions, in which he distinguished the distances, the times, the rates, and the change of rate, Galileo generalized. Thus he discovered the *laws of all falling bodies.* But he did not observe *all.* Too many bodies were falling elsewhere than in Pisa, too many, indeed, in Pisa itself, for him to do this; too many also had fallen before, and too many would fall after his day.

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[1] The best complete discussion of induction is by B. Erdmann, *Logik,* 2nd ed., pp. 730 ff.; cf. Venn, *Principles of Inductive Logic,* 1907, p. 344 ff., and J. S. Mill, *System of Logic,* 7th ed., Bks. III. and IV.

It is in ways such as the method of Galileo illustrates, that the scientist proceeds in order to get laws, principles, and generalizations that can subsequently be used as *premises* for making deductions,—such deductions, indeed, as enable men to control the forces of nature and to make predictions, computations, and plans that are realized in the *concrete facts.*

One is not compelled, in all cases, therefore, *to continue the search for premises indefinitely far back.* There is ultimately an appeal to concrete fact, and a basis for precise generalization. This procedure may be formulated as follows:—

I. A certain number of typical, particular cases, c_1, c_2, c_3—c_n, such as the instances of the motion of falling bodies, are examined, and are found to have a specific property, *P*, such as the property, that the velocity of a falling body is at any instant directly as the square of the time—*typical cases* being such as are taken *at random.*

II. It is assumed, though not proved (since, *e.g.*, all cases of the motion of falling bodies cannot be examined) that all C's are like the relatively few *typical* cases examined. This assumption is more justified if the cases are examined by scientific methods of analysis than if they are not. From I. and II. it is concluded, that

III. All C's have the property, *P*.

This principle and procedure are present in all induction, as this is used both in common sense and in science. Clearly, however, there is an element of risk, of uncertainty in it. Are all diseases caused by micro-organisms? Science has shown that at least *some* are. Are atoms absolutely simple? Science used to maintain that they were, but does so no longer. In induction, then, a "leap" is made from "some" to "all," and this leap is hazardous. For, while "some" is included by "all," "all" is *not implied* by "some," as we have previously seen.

IV. HOW FACTS ARE GIVEN

Induction proceeds, first, by examining, in various ways, concrete, particular facts that are, if possible, *typical* cases, and, second, by generalizing from these. Science is built up in part in this way, as are also common sense and tradition, religion and philosophy, since each of these is characterized by at least the *claim* that *facts* are given which warrant a generalization from them. In a broad sense, then, all knowledge is inductive.

But *what is a fact?* Concerning this important question there is disagreement, not only as regards *what* shall be accepted *as fact,* but also as regards the *criteria,* the tests, the methods by which a distinction is made between that which is accepted as fact and that which is not. We may, therefore, examine these two questions together, relying upon the actual procedure which we find adopted in different fields, both as to what are accepted as *facts,* and what as *criteria.*

1. *Sense Experience*

In daily life and in scientific investigation we get at what in these fields are certainly regarded as one class of facts, namely, those that "come" to us through our senses. Vision, hearing, touch, smell, and taste and other modes of sensation are held to reveal *facts* to us, and, if there are occasional illusions, *this fact* is itself disclosed by the senses *and by reasoning about those data* which the senses give us. However, it is not necessary to go into many of the details of this familiar field. Things, qualities, events, and relations in the world round about us become known to us through our senses. For example, this red book and that brown one, the howling of the wind outside and the odor of this burning tobacco, the motion of the smoke as it curls upward and its height from the floor,—all these are, for me, facts *as my senses now reveal them to me,* as I sit in my laboratory. In our usual sense experience we do not go beyond this, although science and philosophy take us beyond, finally leading us even to doubt, *e.g.,* that our real eye sees its own real image in a real mirror. For the process of sense perception has itself been made the subject of much study in both psychology and philosophy, one of the important typical problems here being *whether,* in perceiving, we get at the object directly, or have a mental state that is perceived and that copies the object, so that we perceive the object only indirectly. There are many other questions concerning sense perception, but common sense does not raise them. Rather, whatever may be the manner and the mechanism of perceiving through the senses, in common sense it is held that such perception gives us *facts.*

A great part of scientific investigation, perhaps practically all of it in the field of the natural sciences, is based on the same assumption. The perception of the scientist is, however, different in some respects from that of the layman, since his is a perception that is controlled and assisted by instruments of observation and of measurement. Telescopes and microscopes, and, indeed, a variety of machines and instruments enable the scientist to observe what the layman cannot, and technical methods of experimentation that are suggested by hypotheses and theories, reveal to the scientist realities which, *without such methods,* would remain hidden. Yet, however much the scientist's perception may be thus controlled and assisted, still, in the last resort, it is *to his sense perception* that *facts* are revealed, and upon its deliverances that the discovery of specific laws, principles, and generalizations is based.

2. *Intuition, Feeling, and Emotion.*[2]

Sense perception, however, is not limited to the disclosure of "things" that are *not ourselves.* For we *perceive our own bodies* through both vision and touch, and also through our muscular sensations and a whole group of organic sensations. But we also perceive, though *not through the senses, that we have sense percepts,* memory, and reasoning processes, and the like, *i.e.*, we perceive that *we are conscious, in several specific ways.* This is self-consciousness. We discover in this way, that we are also, at times, in certain specific moods, such as those of joy, sorrow, and expectancy. There is often, also, a *feeling* of the *wholeness and unity* of "things," even of *the oneness of ourselves with nature,* as opposed to the analytical and discriminating perception of common sense and science. Must it not be admitted, that such emotions and feelings also reveal *facts?*

If we accept the evidence of those generalizations that constitute a good part of traditional religious systems and beliefs, of moral ideals, of standards of art, and the like, then we can only answer this question affirmatively. Religion, morality, and art are based on the deliverances of certain specific emotions and modes of appreciation, and the *facts* thus given are often called *values*. Sometimes they are given only once in a lifetime, though more often they are repeated, and they come, also, to many individuals.

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[2] Cf. E. Underhill, ***Mysticism***, 4th ed., 1912; F. Von Hügel, ***The Mystical Elements of Religion;*** A. B. Sharp, ***Mysticism, Its True Nature and Value,*** 1910; cf. also James, *Varieties of Religious Experience,* XVI.-XVII.; Bergson, all through *Creative Evolution, Matter, and Memory,* and *Time and Free Will.*

But even in those cases in which it is not so much either the emotion, or the analytical perception of parts, as it is the *intuition of wholes,* that is to be emphasized, does not this intuition also give facts? For example, is not the whole space that the reader now perceives quite as much a fact as are its parts, *i.e.*, *both* the smaller spaces, *and* the points, of which both whole and part are composed? Is not a year as much a fact as a day, the *whole motion* of a stone as much a fact as the occupation of specific points at successive instants? Indeed, do not stone *and* motion *and* path *and* time *together form one whole and unitary fact?* And is not the similar fact sometimes experienced, of the *unity of the self and all else,* with no distinctness between the two?

To each of these inquiries the answer "yes" is sometimes given, with certain definite scientific, philosophical, and religious positions resulting. But, while in science the whole is given a *status* which is *equal,* as fact and as value, to that of the parts, in philosophy a more *extreme* position is frequently taken. The whole is given a *higher status,* and the part is regarded as deserving and winning a place *only in the whole.* With the whole thus "made" *reality,* the part is, also, frequently "made" only *appearance,* or, when analysis is regarded as serving only our practical needs, the part is allowed to be only an *artefact.* Thus it is that in religion and theology the whole is often identified with God, while all else is allowed to be but His manifestation. Self-consciousness, emotions, feelings, and intuitions, then, as well as sense perception, are accepted as ways and means by which *facts* are disclosed, and from which *generalizations* are made, thus to *furnish premises* for deductive procedure, and to *cut off the indefinite regress of premises that seemingly would otherwise obtain.*

3. *Memory*

Memory is that specific conscious process *by* or *in* which *what has been experienced* is now *represented* to us. We can remember, with greater or less detail, that which has been experienced, and also, perhaps, the *time* and *place* of the experience. Much of that which is remembered is *imaged* in terms of some one of the senses, but some "things," as *e.g.*, past emotions, are difficult to image, although they can be remembered. However, the question that here concerns us is whether memory gives us *facts* from which to generalize. Obviously, by definition, facts that are remembered have been experienced before; the memory is not the original experience of these facts. And yet we rely on it, and must do so, in order to secure the requisite basis for our generalizations.

Without memory there would be *no imagination,* since this process depends upon the materials that memory furnishes. Accordingly, without memory, on the one hand, to represent the past, and, on the other hand, to furnish a basis for the presentation of the future, our awareness of "things" would be limited to *the immediate present* (whatever, in the last analysis, this "present" may prove to be), so that, unless we could get at *a sufficient number of concrete facts* in the immediate present to furnish a basis for generalization, we could derive no general propositions to use as premises. Such propositions are obtained by comparing and analyzing a number of concrete cases, so as to discover, if possible, similarities, and then to generalize. But, it would seem, that if there were no memory, no comparison would be possible, and, therefore, no similarities be discovered, and no generalizations be justified. Indeed, if we were organisms with an awareness of only the immediate present, we would not even have the *tendency to generalize,* and then we could neither think nor reason. But the fact is, that we do retain, do remember, and, on this basis, do compare and generalize.

4. *Imagination*

Does imagination also give us *facts,* and furnish material for generalization? Imagination is that conscious process in which we are aware of at least *some* entities, or combinations of entities, that have not been presented in the past. However, the materials for imagination to work with must *have been given* or *be now given* in some way, although the complex is new. Oftentimes, indeed, in fancy and creative imagination, the mode of the relating of formerly given parts is such that distinctly *new qualities* of the whole result. Such a creation is characteristic of those facts that are given to the imaginations of the painter, the architect, the sculptor, and the musician, and also, oftentimes, to those of the scientist and the philosopher. Turner imaging his sunsets, and Beethoven his symphonies, are cases in illustration, but Newton also must have reached out in imagination to discover gravitation, and Plato, to get to his Theory of Ideas.

Imagination is to a large extent free; it must *accept* its materials, but with these once given, what restrictions can be placed upon it? For example, who would be so bold as to prescribe future accomplishments of imagination in art? Yet, free as it is, imagination gives us data, which are facts of some kind, and from which, especially in the development of religion and art, generalizations are drawn that oftentimes become the dogmas for posterity. In some fields, therefore, imagination may act *as freely as it will and can.*

Has imagination this freedom also in science, or must it in this field be kept within certain bounds by the exigencies of prediction, of explanation, of consistent systematization, and the like? Hypotheses, theories, laws, all play their part in science, but there are also threads of *compulsion,* either of implication or of consistency, that are not on the surface. Imagination in science plays its part, therefore, *by following these threads* as much as possible, until it is finally led to entities that, previously unknown, thereby become known. It is in this way that, *e.g.,* gravitation, electro-magnetic waves, osmotic energy, and, indeed, a very large number of the other entities of modern science have been discovered. These were, *first,* mere *hypothetical* entities, with possibly *few* connections with observed facts. But, subsequently, deductions and predictions from them led to their confirmation. Imagination, having done its work, was subsequently supplanted by reason.

In contrast with imagination in art, therefore, where it is, perhaps, free without limit, in science imagination must be controlled by the discovery of relations of implication, or, at least, by such relations as are prescribed by the exigencies of explanation, prediction, and system.

Which example shall philosophy follow? Shall it be the example of art, in which imagination, by the freest play, leads to data that we appreciate and value, or the example of science, in which *we guard ourselves* as much as possible from accepting anything as fact merely *because we value it,* and in which, seemingly, "truth at all costs" is the chief concern. This question is perhaps one of the most fundamental philosophical problems. Both motives are present in contemporaneous philosophy, though usually in disguised form. The one motive would have philosophy an art, an appreciation, a personal reaction; the other would have it a science.[8]

This concludes the consideration of *one class of means* by which *premises for deductive use are obtained.* Appeal is made to the concrete facts of sense perception, of emotion, of intuition, of memory, and of imagination. All facts, thus presented, can be *represented* in memory, and from typical cases, generalizations be derived. These generalizations are of the type that such and such is the positive or negative "state of affairs" for such and such a class. This method of discovering general propositions and of putting an end to the indefinite series of premises is *induction.*

Our next question is whether there are *still other methods* by which premises for deductive purposes can be found. As a matter of fact, in the history of science and philosophy, a number of such methods have been accepted as fulfilling this function. Thus *certain general propositions* in such sciences as logic, mathematics, geometry, physics, and ethics *have been held to be true either because they were self-evident, or because their opposites were inconceivable, or because they were presupposed by their attempted denial.* Indeed, in many cases, it is on these grounds that certain propositions have been regarded not only as factually, but also as *necessarily true,* and have, therefore, been called *axioms. Frequently, also, some of those principles which have been most important as a basis for certain*

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[8] Cf. W. T. Marvin, *First Book of Metaphysics,* Chap. I.

specific philosophical systems have been established by these tests.

5. *Self-Evidence*[4]

The principle of self-evidence may be stated briefly in the form of the proposition, that *that which is self-evident is true, or is a fact.* As applied, this means that some proposition or principle appears to be true *"on the face of it,"* or, that *it does not need proof*, or, indeed, that it is, perhaps, *incapable both of proof and of disproof.* Examples of propositions that have been regarded as self-evident, and, therefore, as ultimate and necessarily true, are: (1) the whole is greater than any of its parts; (2) every effect has a cause; (3) the cause equals the effect; (4) everything in its individuality is identical with itself and distinct from every other thing; (5) of two contradictory propositions, one must be true; (6) everything must act in accordance with its own nature; (7) we can know only our own ideas; (8) through a point, *C*, not on a straight line, *D*, there is only one line parallel to *D*.

However, the position taken at the present day toward the test of *self-evidence* is, that it is *not a criterion of absolute or necessary truth*, but, at best, *only an empirical test*, which, though it may be used on occasion, is very liable to error. Indeed, the critical examination of, and perhaps the inductive generalization from, a large number of important historical instances of principles that have been regarded as absolutely true because of their *self-evidence*, but that are now known *not* to be true, or, at least, not necessarily true, demands this interpretation. On the other hand, the necessity of using self-evidence as an empirical criterion, which, though it is liable to error, nevertheless reveals a fair and perhaps high degree of probability, can also be shown. For example, that there is a rigorous logical connection of implication between the premises and the conclusion of a syllogism, is ultimately accepted only because of its self-evidence. For if we doubt any specific instance of syllogistic reasoning, and therefore *test* it for its *validity* by further reasoning, then we must accept *the logical connection* of the several steps in the *final* reasoning process, *on the ground alone* that they are self-evidently valid or correct.

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[4] The principle of self-evidence was used, *e.g.*, by Euclid in arriving at his axioms, and by Aristotle in getting at the intrinsic properties of things. It was really recognized as a criterion by Descartes, in both his *Meditations* and his *Discourse*, and by Leibniz in his *Meditationes de Cognitione, Veritate et Ideis.*

However, it is evident, *perhaps self-evident,* that *a criterion of truth* can be *such a test provided only that it itself is true.* As applied to the criterion of self-evidence this means that the question must be raised whether it *is* self-evident, that that which is self-evident is necessarily true. To the writer of this book *it is not.* This alone suffices to show that self-evidence cannot be an unequivocal and absolutely certain test of truth, for here there is at least *one exception.* The principle of self-evidence is itself not self-evident to every one. *It does not stand its own test.* Then it cannot be a necessarily true and absolutely certain criterion.

We must conclude that self-evidence is *only a psychological test of truth.* What is self-evident to one is not to another. Therefore, so far as this test is accepted and used, as perhaps it must be in certain cases, there is always the proviso, that it is liable to error, and is not absolute.

6. *The Inconceivability of the Opposite*[6]

Almost the entire characterization and criticism that has just been made of the criterion of self-evidence holds also of this second test or criterion. Historically, this test has been applied to many principles to which the test by self-evidence has also been applied, *i.e.,* that which is self-evident has been further tested by *attempting* to conceive its opposite, and, with this attempt failing, has been regarded as necessarily true. This test may be stated, in the form of the proposition, that *that whose opposite cannot be conceived must itself be conceived and be true,* so that *we cannot think without it,*—if to *think* is to *conceive.* For example, if we *cannot* conceive that the part should be equal to, or be greater than the whole, it would be concluded *both* that it is *necessarily true, and* that *we must think,* that *the part is less than the whole.* Historically, this proposition as regards the relation of whole and part was established as a principle in just this way—though it is now known to hold only for *finite wholes.* For infinite wholes the relationships of "less than," "equal to," and "greater than" do not apply at all, or, more accurately, *are not present at all.* As further examples, one may ask, if it can be conceived, (1) that a "thing" should be *both itself and something else;* and, accordingly, provided mind is different from matter, (2) that mind *should act in contradiction to its own nature.* Also, can one conceive, (3) that a thing should cease to be itself and become something else, *i.e.*, that it should *change;* or (4) that two "things" should be related and *not* influence each other? If one *cannot conceive* these propositions, then *must one not think the opposite of each one of them,* and conclude that this opposite is absolutely true?

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[6] The principle of the inconceivability of the opposite was recognized, *e.g.,* by Herbert Spencer, *Principles of Psychology,* §§ 420-437; cf. J. S. Mill, *Logic,* 8th ed., II., VII., 1-4.

Such examples might be added to almost indefinitely, with the result that a list could be obtained which would include *many* a proposition or principle that has been of great influence on both philosophy and science.

But the test of the inconceivability of the opposite proves, after all, to be, like self-evidence, *only a psychological test.* It cannot be absolute, since it has been applied to establish the truth of many a principle, in both science and philosophy, *that subsequently has been shown to be false.* Many an *inconceivable* "thing" has turned out to be quite *conceivable;* as, *e.g.*, the propositions, that the earth is round; that a moving body continues to move with no outside force acting on it; that, in a plane, there may be, through a point, *more than one parallel* to a line not containing that point. Therefore, *some things at least that formerly were inconceivable are now no longer so.* Also, that which is inconceivable to one mind is not to another.

All this is evidence that this test does not reveal what *must* be conceived. Indeed, to the writer it is *not inconceivable,* that the proposition, that that whose opposite is inconceivable is true, *should itself be false. The test does not establish itself,* but, like self-evidence, reveals, not what *all must* think and conceive, but only what *some* must and do think—*for psychological reasons.* It is a test that is, at best, only empirical and quite fallible, having been derived, in fact, by induction from certain positive cases for which it has *seemed to work successfully.* But that which is *inconceivable today, may nevertheless be true,* and tomorrow be *conceived, primarily because it is discovered to be a fact.*

7. *Presupposition by Denial*[6]

This principle differs from the tests of *self-evidence* and *the inconceivability of the opposite* in that it is a *logical* test, whereas they are psychological criteria. *For to be presupposed is to be implied.* Only if we take something to be *presupposed* which really is not, does the psychological factor enter, for then there is error.

The principle of presupposition by denial is, however, closely connected with the test by "the inconceivability of the opposite" and also with the *"reductio ad absurdum."* This latter test proceeds by first assuming the *contradictory* of that principle which is to be established, and by then finding that this contradictory is, in some way, *absurd,* so that the opposite, the original principle, must be accepted as *necessarily true.* But this raises the question as to what the *absurd* is. Is it that which is *inconceivable,* or, that which is *not yet known, but seems most improbable,* or, that which is self-contradictory? The first two kinds of absurdity are, however, only psychological, for, the *absurd,* thus defined, has oftentimes proved to be *fact.* To this extent the method of *reductio ad absurdum* turns out to be only a very fallible test. Wireless telegraphy, and automatic adding machines, and six-day trans-Atlantic steamships were at one time *absurd and inconceivable,* but they subsequently proved to be facts.

However, when the absurd is identified with the *self-contradictory,* the *reductio ad absurdum* becomes the test of (or proof by) "presupposition by (attempted) denial." Within the field of seemingly self-contradictory "things" one can distinguish self-contradictory *terms,* such as *round-square.* But, as distinct from such terms, there are also self-contradictory *propositions;*

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[6] The best statement of the principle of presupposition by denial is by P. Coffey, *Logic,* 1912; cf. Jevons, *Principles of Science,* 1874. This is also the principle of Kant's "deduction" of the categories; see Müller's translation, p. 21 and p. 4.

such as the proposition, *there are no propositions.* This is self-contradictory, since *it is itself a proposition.* Terms as such do not imply, and so it may be, that, strictly speaking, there are no *self-contradictory terms.* Accordingly, a term that seems to be self-contradictory, such as *round-square,* may be a *mere joining of symbols.* But, if this is the case, then it can be *propositions* alone that are *true* on the ground that *they are presupposed by their own attempted denial,* and by their contradictory. Such a denial is also an *absurdity,* in that it contradicts itself by *presupposing the very "thing" that it denies.* For example, the position of the skeptic, that there is no truth, is self-contradictory and absurd *in that* it is *itself* advanced as a truth, and so presupposes that *there is some truth*—to the extent, at least, of one truth. Therefore, the proposition *there is truth,* is one that is *established by its own denial.*

Other examples of propositions which are established or proved in this manner are: (1) *There is thinking;* to deny this, is to think and, therefore, to presuppose that *there is thinking;* (2) *there are propositions;* that there are not, is itself a proposition; (3) *the principle of excluded middle;* to deny this, *i.e.,* to assert that there is a third possibility between two contratradictories, *presupposes* that there is *no third possibility* between the two contradictories of the *universality* of this principle and *some exceptions* to it.

But if there are certain propositions which are *established* by the principle of "presupposition by denial," it is important to determine *by what test this principle is itself true.* The necessity of putting the principle to some test is evident, since, if it itself is not true, it cannot be a (true) test for truth and fact, even when it is correctly applied. However, as at least a partial response to this just demand it can be shown, that, unlike the tests of *self-evidence* and *the inconceivability of the opposite,* this principle *does apply to itself, i.e.,* that it *is true by its own test.* This demonstration can be made as follows, though in a manner that is, perhaps, of necessity somewhat involved.

The question is, whether the principle that "that which is presupposed by its own denial" *is itself presupposed by its own denial.* If it is, then it is true by its own test. To give one proof, let us call this principle, *A,* and then *deny that* this principle is true, *i.e., assert that it is false.* The problem then is, Does *this denial* presuppose *the principle* in question, namely, *that that which is presupposed by its own denial is true?* The answer to this question is "yes," and the reasons for this answer are as follows: If *the specific denial* under consideration is true, *it is true* only on the ground of *a specific principle,* namely, one that concerns the relationship between a universal affirmative proposition, *A,* and a particular negative, *I. This principle is,* that if a particular negative, *I,* is true, the corresponding universal affirmative, *A,* must be false, and, *conversely,* that, if *A* is true, *I* must be false. But *this principle,* holding between propositions *A* and *I, is* the very principle that, in the instance under investigation, is identical with proposition *A.* That is, it is the principle, that the reason why a *contradictory,* either *A* or *I,* must be true, if the other contradictory, *I* or *A* respectively, is false, *is, that a proposition is presupposed* (implied) *as true by its denial* (the contradictory). Therefore *the denial of this proposition or principle itself,* or the assertion of its contradictory, *presupposes this very principle.* In other words, this principle is itself presupposed by *its* own denial, and, therefore, applies to itself, or is true by its own test.

The original principle thus confirms itself, and in this respect is different from the two criteria previously discussed. For this very reason it is to be regarded as a *logical,* and not a psychological criterion. Its *norm* is what is *"presupposed"* or *"implied," as against what is "evident"* and what is *exclusively "conceivable."* The only psychological element that concerns it, has to do with the question whether or not it *applies* in a specific instance. But, *if* it does apply, it *applies logically,*—and not psychologically, as do the other two criteria. Yet it may be difficult to determine whether or not it does apply in a particular instance. *For example,* does it apply to *that situation* which is asserted in pragmatism, namely, *that there is no absolute truth, but that all truth is relative,* since it (all truth) is identical only with that which is *adaptative,* and works and bring satisfaction? The anti-pragmatist claims that *this whole pragmatic theory of truth* is advanced, not as a theory that is true by its own explicit definition of truth as *fluctuating,* but *as one that is true absolutely,* and, *therefore, that absolute truth* *is presupposed by its attempted denial in pragmatism.*[7] The pragmatist can repudiate this accusation only by the counter claim of *consistency,* namely, that his *pragmatic theory* is itself true *only pragmatically.* Which party is correct in his claim? It is difficult to decide, since there is no criterion or standard of correctness by which to settle such a question between standards.[8]

The difficulty in such an instance is, however, not in the principle (of presupposition by denial) itself, but in its application. But there are many cases in which the application of the principle is not so difficult, and the resultant demonstration of truth is entirely clear. For example, geometry is replete with such instances, as are also logic and the whole modern "theory of numbers." Some of these instances will be examined in subsequent chapters.

In summary it may be said, that the principle of *presupposition by denial* is established by induction from those cases where it applies, and that it also confirms itself. No exception to it has been discovered in the realm of those instances to which it has been applied, nor has it been proved false as have the principles of "self-evidence" and the *"inconceivability of the opposite."* Accordingly, both the principle itself and that phase of it which is the *reductio ad absurdum* are to be accepted as extremely *reliable logical criteria.*

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[7] *E. g.*, by Royce, the Eternal and the Practical, *Phil. Review*, Vol. XIII., No. 2, 1904.

[8] Consistency, it may be remarked, is open to two interpretations, the pragmatic and the anti-pragmatic. Common to both is the definition of consistency as freedom from contradiction. The pragmatist interprets this as expressing a certain *need* that we feel, which, when satisfied, is identical with one kind of truth. The anti-pragmatist interprets it absolutely, as a characteristic holding of an objective "state of affairs," especially of that one which characterizes that whole which is the universe. The universe of facts must be marked by consistency. To the anti-pragmatist this is self-evident; its opposite is inconceivable. It is, indeed, *presupposed by its own denial.*

CHAPTER XVI

THE NATURE OF CONTRADICTION

THE term *contradiction* has already been used in a number of discussions. Thus the "law of contradiction," "contradictory terms," "contradictory propositions," and "self-contradiction" have been referred to, or discussed. The more precise meaning of the term must now be determined.

On the one hand, contradiction would seem to mean or to involve *negation* in some way, and in some sense. Yet, on the other hand, experience always has a content. *"Something" is experienced.* Indeed, it would seem to be impossible to experience, and yet experience *nothing.* Must there not be, then, *something positive* when we experience *negation* and *contradiction,* and, if there is, *what is this positive "something"?*[1] An answer to this question may be sought as follows:—

Examples of *contradictory terms* are, *red* and *not-red, one* and *not-one, moving* and *not-moving:* of *contradictory propositions, All even* numbers are divisible by two, and, *Some even* numbers are *not* thus divisible; *No* energy can be destroyed or annihilated, and *Some* energy can be destroyed: of *self-contradictory terms,* round-square: of *self-contradictory propositions,* "Epimenides, being a Cretan, said, 'All Cretans are liars.'" Some of these examples and the *states of affairs typified by them* may now be examined and analyzed.

Let us consider first the contradictory terms, *red* and *not-red.* It may be *assumed* that all know (to some degree) *what* is meant by *red,* and *what red is,* and also, that it is generally realized that the term *denotes* a certain specific group of colors, namely, the different *kinds* of red. *There are many reds.* But there are also *not-reds,*—perhaps, an infinite number of them, *including not only all the other colors, but also everything else that,* like motion, space, time, mass, hardness, and electricity, *is not a color at all.*

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[1] Cf. Whitehead, *Introduction to Mathematics,* on the meaning of zero, Chaps. V. to VII.; also Russell, *Principles of Mathematics,* and *Scientific Method in Philosophy* (see his index); cf. also Bergson, *Creative Evolution,* Chap. IV.

Now it is found to be a fact, that *e.g.*, one and the same surface *is not at the same time and in the same area both red and blue.* It is either red, *or* some other color. Colors are, as a matter of fact, of *such a character* that they *exclude* one another from existing at exactly the same time and place. *But a color and something not a color can coexist* under these conditions. For example, a specific red and a specific degree of hardness can simultaneously be qualities of one and the same surface.

In relation to a particular red, then, all other "things" are (formally) *not this red,* yet they are first experienced as quite as *positive "things"* as is red itself. Not by themselves, therefore, but only in *relation* to red are they *negative* entities. However, among the not-red "things" there are *two kinds;* the one kind consists of other *colors,* and these are *excluded* from *coexisting* with red at the same time and place; the other kind consists of such "things" as hardness, extension, and motion, that are *not* so excluded. These other "things" and red can *coexist* in the same place and at the same time. It is the first kind of "thing," namely, the other colors, that is, therefore, *the real contradictory of red, for only between other colors and red is there the specific exclusion.* But even this exclusion subsists only under the *specific conditions* of the same time and place. For, under the other specific conditions either of different times and the same place, or of the same time, and different places, there can be both *red* and some other color.

Contradiction in the case of *terms* is thus shown to be a relation that is dependent upon, or that is identical with, *exclusion.* When and where there is *genuine exclusion, there also is contradiction.* But the exclusion is itself *a positive relation* between positives. Contradiction and negation are, therefore, only derivatives of this specific relation. For this exclusion to subsist there must be certain specific conditions. The two positive "things" that exclude each other must (1) belong to the *same kind, i.e.,* to the same *genus,* as, *e.g.,* do blue, red, green, and yellow, as *colors.* The positive "things" must be, to express the matter figuratively, like the arms of a lever, *parts of the same complex entity.* But, just as a lever must rest on a fulcrum, so also, in order to have a genuine contradiction or exclusion, there must be a "logical fulcrum." This fulcrum is given, in the instance of the entities just examined, *by the specific conditions of the same place and the same time.*

The conditions on which a genuine contradiction subsists between *propositions* are essentially the same as those for contradictory terms. In every case of contradictory propositions, one proposition is negative, at least in its "logical form." But a proposition is, as we have seen, a relational complex, and, although there are different types of propositions, all such complexes are identical with *positive states of affairs.* A negative proposition is, therefore, merely the fact of the *exclusion* of one positive *state of affairs* by another, but *this relationship is itself positive.* It may be that in discovering negative propositions, we first endeavor to discover the compatibility of one *state of affairs* with another, and, failing, formulate the result in a negative judgment. But this judgment, then, only expresses *the positive fact of the exclusion.*

All this may be illustrated by an examination of one of our previous examples, namely, that which concerns the divisibility of *even* numbers by *two.* Let us grant that there is the objective state of affairs or proposition, "that all even numbers are divisible by two," and also, that there is another state of affairs of "divisibility by two" *only with a remainder.* If this is the case, then there is also the *state of affairs* of the *exclusion* from all *even* numbers of "divisibility by two *with* a remainder." But this specific "state of affairs" is also a *proposition,* which one asserts in the form of the judgment, *that it is false that some even numbers are not divisible by two.* This last could itself be a proposition, *provided only* there were a consistent and implicative *number system* in which *even numbers are divisible by two with a remainder.* But, if this were the case, this would be a proposition in a distinct and different *universe of discourse* from that in which even numbers are divisible by two, just as, *e.g., the several postulates* concerning parallels are *in those distinct universes of discourse* which are known respectively as the Euclidean, Lobatschewskian, and Riemannian geometries.

The examination of further similar instances confirms our assertion, that the situation as regards contradictory propositions is the same in principle as it is in the case of contradictory terms. Such *terms* are *positive* facts or entities that *exclude* one another, but that, *accordingly,* in the case of physical *existents, are* either in the same place at different times, or *are* at different places at the same time. *In the case of propositions* these conditions of place and time do not hold, but, instead, there are conditions which may perhaps best be called *logical,* and *by virtue of which contradictory propositions subsist in different universes of discourse.* These different universes may, in analogy to *different places,* be called *different logical loci.*

The problem of a proposition that is *self-contradictory* is perhaps more difficult than that of two propositions that are contradictory of each other, yet the solution of this problem is similar to that of the two preceding. Propositions, at least those which are identical with the relation of inclusion, complete or partial, positive or negative, between classes, have *two opposites, a contradictory* and *a contrary.* Thus *A* and *O,* and *E* and *I* are pairs of *contradictory* opposites; and *A* and *E, I* and *O,* of *contrary* opposites, with the latter two called subcontraries, as distinct from *A* and *E* as contraries. For example, as opposed to the proposition, *Nothing is a proposition,* there is the contradictory opposite, *Some "things" are propositions,* and *also* the contrary opposite, *All "things" are propositions.* The first of these is a *self-contradictory proposition,* and exemplifies the type.

Self-contradictory propositions imply or presuppose their contradictory opposite. Thus, *Nothing is a proposition,* implies that *Some "things" are propositions,* since *it itself is a proposition.* Self-contradictory propositions are false for the reason that they do thus presuppose their contradictory. They are, therefore, *one class* of propositions that *imply,* showing that even so called *false* propositions have some *status,* and *must subsist in some universe of discourse,* namely, in one that is *excluded* from the universe of *true* propositions. But, further, in the case of the example under examination, whereas *nothing is a proposition,* implies that *some "things"* (at least one) *are propositions,* this last relational complex or proposition does not exclude, but is compatible with, the specific *subcontrary* state of affairs, that *some "things" are not propositions.* These *two* "states of affairs" can *cosubsist* even as red *and* extension, mass *and* motion, biological *and* moral situations can cosubsist. As an example of this we have, within the same universe of discourse both *propositions and* the *"elements"* or terms *of these—some of which "element" are not propositions.*

From this examination of several instances of contradiction we reach the conclusion, that this *relation* is a specific one, and that it rests in every case upon the *positive relation of exclusion between entities that are themselves positive and not negative in character.* Contradiction is, then, *not* a law that is resident in the thinking process, as the psychologizing tendency in logic interprets it to be, nor is it an instrument invented unconsciously by the collective ingenuity of men of European stock; but it is *an empirically discovered fact that is characteristic of many "things" in an empirically discovered world,* and thinking must conform to it only because thinking must conform to "things," to facts. And *that fact* which, above all, thinking must conform to, in order that it shall be correct thinking *in regard to the principle of contradiction,* is the fact of *exclusion.*

One of the instances which might be used in our analysis is the very exclusion or prohibition of thinking certain corrollaries of the principle of contradiction to be false. For example, to attempt to think that *two contradictories should both be true,* or, that something should be *both* (1) *excluded and* (2) *not excluded* from a universe of discourse, *presupposes, in form, the very principle of contradiction* or of exclusion, and its corrollaries, and, in result, is *precluded* by this principle. In other words, *the principle of contradiction is itself presupposed in the very form of the attempt to deny it.* It therefore presupposes itself, *or,* it *excludes its own contradictory.*

CHAPTER XVII

THE DISJUNCTIVE SYLLOGISM

THIS method of proof need not long detain us. It is appropriately introduced at this point because of its connection with exclusion and contradiction. A disjunction is an analysis, following the objective facts, into distinct and mutually exclusive entities. These entities may be either *terms,* such as *"vertebrate"* and *"invertebrate,"* or *propositions,* such as *"all related terms are dependent on one another,"* and, *"some related terms are independent of one another."* The fundamental principle of the disjunction, to be observed in all cases, is, *that it should be complete.* Since it is identical with exclusion, it is complete in fact. It therefore should also be complete in those judgments which aim to assert the facts. The disjunction is *expressed* as complete, if *all* the entities that are *excluded* by that entity which forms one member of the disjunction, are expressed or referred to in the judgment that formulates the disjunction. This completeness of reference can be obtained *either* by enumerating in *positive form all* the several entities that are excluded from one another, *or* by using *contradictories,* and, with the disjunction thus expressible in either positive *or* negative form, these two forms can be converted into each other.

As an example of these assertions we select the fact that a particular animal, say, a whale, is either a vertebrate or *not a vertebrate, i.e.,* an invertebrate, and also the fact, that a whale is either an invertebrate *or* a mammal, bird, reptile, amphibian, or fish, for these five "orders" are the *sub-classes* of vertebrates. But, from the fact that a whale is *not an invertebrate,* it follows, that it is both a vertebrate *and* also either a mammal, bird, reptile, amphibian, or fish. And, by further exclusion, if the whale is *not* any one of these last four, it is a mammal.

This example illlustrates the logical structure of the *disjuntive syllogism.* The *major premise* asserts the exclusion—exhaustively, if possible. This is done either by using *contradictories,* which are always exhaustive, since there is no middle ground, or by enumerating *all* the *positive* possibilities that come under either one of the contradictories. The *minor premise* consists in the assertion, *either* that one of the possibilities is an actuality, *or, that it is not. If it is* one possibility become actual, then, since by the law of identity a "thing" is itself and *not* something else, and, since by the law of contradiction it cannot be both itself and something else, there is the *implication,* that it is *not* any of the other possibilities; conversely, if there is evidence that a "thing" *is not any one* of a certain set of possibilities *except one,* it follows, *that it is that one.* This *assertion* or *denial,* in the *minor premise,* of one or the other of the terms of the disjunction in the major premise, follows the usual principle in logic and mathematics, that *to negate a negative* is to affirm. Thus, if the minor premise is of the form *A* is not *not-B,* where the major premise is of the form, *A* is either *B* or *not-B,* the conclusion is implied, that *A is B.*

In constructing a disjunctive syllogism by the use of contradictories in the major premise, care must be taken, however, that the terms of the disjunction are such that, if an entity "belongs" to one of the two contradictories, it *cannot* belong to the other, *i.e.,* is *excluded* from that other. The danger to be avoided is illustrated by the judgment that *a line must be either finite or infinite.* This judgment is false for the reason that a line can be *both* finite *and* infinite—*finite* in respect to smaller lines, as *units* of length, and infinite in respect to points. For certainly a line is "made up" of *both smaller lines and points,* and can, therefore, belong "at the same time" to the *two* distinct universes of discourse that *logically* determine *finiteness* and *infinity* respectively. The genuine *exclusion* or contradiction in such a case subsists in the fact that *as regards points* a line cannot be *both finite and infinite,* and that, *if* it is the one, it is *not* the other; also, that *as regards smaller lines,* it cannot be both finite and infinite, and that, if it is the one, it is not the other.

The "material" truth of the conclusion of a disjunctive syllogism depends, then, upon two conditions: *first* upon the fact of the complete and genuine disjunction or exclusion with which the major premise is identical, and, *second,* upon the fact, expressed in the minor premise, that a certain "thing" either *is* or is not (identical with, or included in) one of the terms of this disjunction. Thus the two premises *are* "materially" true (1) if the disjunction subsists between genuine *contradictories,* and (2) if the "thing" under consideration belongs to the genus which conditions those contradictories. For example, a *"thing"* must be either red *or not-red, i.e., some other color, provided* it belongs to the *class of colored "things." Also,* in this instance, the major premise is true, *if all* positive colors are enumerated. In general, the major premise is correct, if *all the positive sub-classes* of the genus to which the "thing" belongs, are enumerated.

However, to ascertain whether or not in any particular case the major premise is materially true in this sense is a problem for *empirical* investigation, and here our knowledge is always fallible. Evidently it is incumbent upon us in this connection to discover *as many actual positive differences* among "things" as we can, and to guard ourselves against inferring, *from our failure to distinguish, the absence of objective distinctnesses.* The minor premise of the disjunctive syllogism is to be established by any method which will show that the entity under investigation is included in, or excluded from, one or more of the entities involved in the disjunction of the major premise.

While the disjunctive syllogism has a certain limited use by itself as a method of elimination, its chief value, however, consists in its union with the hypothetical syllogism to form the *dilemma.* As an illustration, let us assume, in accordance with our previous discussion,[1] that there are only *three* possibilities as to the nature of *logical* principles and entities, namely, that they are all either (1) psychological, or (2) instrumental, or (3) objective. The *establishment* of any one of these, excludes the other two, or the disproof of any two establishes the third. This is disjunctive reasoning, pure and simple.

But how *disprove any* of these possibilities? To do this one might show them to be (1) *absurd* in some sense, *i.e.,* to be inconceivable or self-contradictory, or (2) *false as a matter of fact,* or (3) false because they involve *consequences that are not facts.* With any of these demonstrations successful for one possibility, the remaining possibilities would be inferable as *true.* But,

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[1] Chap. XIII.

in a process of this kind, we have a *dilemma,* or a *trilemma,* according as *two* or *three* possibilities are enumerated, and their *consequences* developed. This method should, accordingly, be presented in some further detail, with a preliminary presentation of the *hypothetical syllogism,* which is a constituent of every dilemma.

CHAPTER XVIII

THE HYPOTHETICAL SYLLOGISM

THE hypothetical and disjunctive syllogisms and the dilemma, while they are methods of establishing conclusions, do not put an end to *the indefinite regress of premises* any more than does the *categorical* syllogism, for their conclusions are *materially* true only provided their premises are materially true. These premises can in many instances be established by deductions from other premises, but ultimately an appeal to some other method of establishment must be made. This has just been seen to be the case with the disjunctive syllogism. To establish the major and minor premises of this syllogism there must in most instances be an appeal to fact; *i.e.,* by some analytical method one must discover differences among "things" in order, *first,* to set up the disjunction, and, *second,* to include or not include the entity under examination *in,* or to identify or not identify it with, some one or more of the *distinct* entities that are asserted by the major premise.

As a matter of fact, however, all *establishment* of our judgments is *hypothetical or conditioned. This must be the case* in the absence both of any one *absolute* test of truth *and* of the *means for the certain application* of such tests as we do have. All deductive proof, all induction, all self-evidence, *all "conceivability,"* and all proof through "presupposition by denial" *lack absoluteness* both in themselves and in their application. Therefore, even these methods and tests are, in this respect, *hypothetical* in character.

However, although we have no test or method by which to insure the absolute correctness either of our tests or our methods, or of their application, and also no means by which to make ourselves absolutely certain of the material truth of our premises, nevertheless, in both cases, *a high degree of probability* is attainable in a great many instances. Indeed there is an immense body of knowledge that is true in this sense, and there are methods of establishment and of proof that have the same standing. Thus, a high degree of probable truth characterizes our knowledge of a great many (1) *"things," qualities,* and *events,* and also (2) of the *connections* and *relations* in and among *these* entities.

One kind of knowledge is, however, almost exclusively, if, indeed, it is not, in some cases, *wholly a knowledge of connections.* Such knowledge is found, *e.g.,* in pure mathematics and in logic. This means that *e.g.,* in mathematics we *freely assume or select* various differing *sets of propositions,* and then proceed to discover their *implications.* The assumed propositions, provided they give an implicative system, *must be facts in some sense,* though they need not be existent facts.

An illustration of *such* knowledge is presented by the following example from the field of geometry: Let it be assumed (1) that the spatial universe is bounded by a spherical film and (2) that all "things," including human beings, change in size in *inverse ratio* to their distance from the center of such a sphere. Then it follows from or is implied by these two assumptions, that if the boundary of the sphere were approached, it would continue to seem to be as tremendously, even as *infinitely distant* as it would from near the center. For, although there would be "a smaller and smaller distance to go," nevertheless, as the boundary was approached, a human being and all his means of measurement would approach *zero* in size. Accordingly, the *distance* ever still remaining to be covered, would continue to *seem quite as great,* in relation to any *unit of measurement,* as it *now* seems to be from our own terrestrial center, and with our bodies of five cubits stature.[1]

Who can prove that all this is not the case? For, are not

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[1] This Non-Euclidean world is described by Poincaré, *Science and Hypothesis, trans.* by G. B. Halsted, p. 49 ff.

size and *distance* wholly relative? But, *if* all "things" were changing size in the same ratio, could we ever become aware of this from observation? Then is not the above *hypothesis* one that cannot be disproved, although, also, it cannot be shown to state the *existent* fact? Yet *one can make the hypothesis, and deduce from it, i.e., discover its implications.* If we do this, we are introduced, however, to a world and a space which are *not* described by that Euclidean geometry which we learned in our school-days, but by that other geometry, namely, the Lobatschewskian, in which *parallel* lines meet at the boundary of a sphere, and the sum of the angles of a plane triangle is less than two right angles.

It is to be carefully noted, however, that in this example it is not asserted, that *either* the original hypothesis *or* its consequences portray the actual state of affairs in the *space in which we live.* Indeed, there are reasons, due to the grossness of measurement, why neither the hypothesis nor its consequences can be either shown or *not* shown to accord with this space. Yet if the original hypothesis could be established for our space, say, by measurement or experimentation, then would the consequences which have been stated *be the fact about our space, provided* those consequences *as stated* are really implied by the hypothesis.

Although, now, in this example, the hypothesis can be *neither affirmed nor denied* to be the existent fact, and although there are any number of similar hypotheses, there are, also, *an extremely large number of propositions,* which, as *hypotheses* for certain consequences, *can be affirmed* to be existent facts with a *high degree of probability.* In fact, propositions of this kind make up the greater part of all the *natural sciences.* But, with the hypotheses asserted to be existent facts, the consequences likewise are so asserted. It is in this way that science becomes systematic. *Connections* of various kinds between states of affairs are discovered and asserted in hypothetical propositions. Thus, to illustrate, we find that *if* the moon moves around the earth in a certain path, there will be a solar eclipse. But we discover that the moon *does* so move, and we affirm the antecedent—the hypothesis. But *therewith,* also, we *affirm the consequent, namely, the occurrence of the eclipse.*

This example illustrates the structure of the *hypothetical syllogism*. In general, this method of reasoning and of establishing conclusions consists of a *major premise* which is the assertion of a connection between two propositions, an antecedent and a consequent, in the typical abstract form, if *a is b, c is d*. By the orthodox rules, the *minor premise* must be either the affirmation of the antecedent, *or* the denial of the consequent. Affirmation of the antecedent carries with it the affirmation of the consequent: denial of the consequent, the denial of the antecedent. But, *denial of the antecedent* is usually maintained not to necessitate the denial of the consequent, nor affirmation of the consequent, the affirmation of the antecedent,—for there may be other *conditions* for the consequent than the particular antecedent stated. These rules are held to apply to all cases.

Undoubtedly, however, there are some connections between certain antecedents and consequents so precise and unequivocal that the limitations stated by these rules do not hold, so that denial of the antecedent does *necessitate* denial of the consequent, and affirmation of the consequent, affirmation of the antecedent. In illustration, this may be said to be the case with the connection asserted by the premise, *if one atom of hydrogen and two atoms of oxygen combine, water is formed.* However, these unequivocal connections do not seem to be universal. For example, if electricity passes through a copper wire, heat is generated. But from the fact of heat somewhere, we cannot infer the presence of electricity in a conductor. The *rules* for the hypothetical syllogism can only be so formulated, therefore, as to cover *all* cases with certainty. This is done by the rule which demands that we must "either *affirm the antecedent, or deny the consequent.*"

Our discussion will have made it clear that there is a fundamental difference between *merely asserting a connection* of implication between two propositions, *and asserting* the *existential* character of the antecedent, or denying that of the consequent, *i.e.*, to assert that *if a is b, c is d,* and *if c is d, e is f, and so on,* is quite different from asserting that *a is b.*

This difference is most important. Wherever we can discover connections and yet are not able to *assert* antecedents or *deny* consequents, we can nevertheless discover whole *systems* of consistent and implicatively connected propositions which, for this very reason, and in this very sense, are *facts*.

This method offers a means of discovering entities that are not limited to the field of *existents*. In other words, it is possible *rationally to discover entities and states of affairs* that are contrary to existent fact, or that do not exist, *i.e.*, we can discover *what would be* the state of affairs, *if* certain "things" did not *exist,* indeed, *if* nothing *existed,*—defining an *existent* as that which is correlated either with a specific part of space and a specific part of time (physical existents), or with a specific time alone (mental existents). Such entities—that do not exist, but that are, nevertheless, discovered to be *facts* by developing consistent systems of propositions, are called *subsistents.*[2] Indeed, all propositions that concern *existents* may ultimately *presuppose propositions* that concern *subsistents.* For example, propositions concerning *matter* and conscious processes *presuppose* certain related *states of affairs* concerning *space and time and number.* But space and time and number, though facts, are discovered to be, not existents, but subsistents. This discovery agrees with the scientific point of view that these entities are peculiar "things" that concern infinity, endlessness, continuity, and the like, and that are studied, *not* by physical experimentation, but, independently thereof, by the rationalizing methods of thought and reason.[3]

CHAPTER XIX

THE DILEMMA

The dilemma is usually defined in the text-books as a syllogism in which the major premise consists of a disjunction between two hypothetical propositions, the minor premise, of a disjunction between two categorical propositions, and the conclusion, of a disjunction between *either* the *antecedents or* the *consequents* of the major premise. To illustrate, we may assert as a major premise, that, "If education is popular, compulsion is unnecessary; if unpopular, compulsion will not be tolerated"; and as a minor, that "education is either popular or unpopular"; the conclusion is implied, that compulsion either is unnecessary, or will not be tolerated.

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[2] See Chaps. XLI., XLIV.

[3] Scientific proof of this distinction is found in the fact, *e.g.*, that nowhere in the implicative system *of any kind* of geometry are such entities as *mass,* momentum, and the like—entities usually identified with matter and *existence*—found to be *implied.* Space is thus demonstrated to be *independent of that which exists,* and, in this sense, to be a *subsistent.*

This example is a *constructive dilemma,* because a disjunction between the *antecedents* of the two hypothetical propositions of the major premise is *asserted* as a minor premise. On the other hand, where a disjunction between the *denials* of the two consequents is asserted, the dilemma is called *destructive.* In either case, of course, either the antecedents *or* the consequents may themselves be negative in meaning, as is the case with one antecedent and the two consequents in the example just given, and the rule then holds, that the denial (in the minor premise) of a negative is an *affirmation.*

The technical *rules* for the dilemma are those of its constituents. The consequent must genuinely depend in some way on the antecedent, and the disjunction must be complete. This it is, if it subsists between *contradictories,* or if, in the case of *contraries, all* the possibilities are recognized and stated. The minor premise must be a disjunction either between antecedents asserted or consequents denied.

For our purposes, however, the dilemma may be advantageously defined more broadly as that method of establishing a position, or of showing *the necessity of accepting a proposition,* by demonstrating that the opposed position or positions lead to consequences that cannot be accepted for the reason either that they are not facts, or that they are absurd, or inconceivable, and the like. This may be illustrated by an example, which, though not materially correct in every way, shows the *form* of this method of reasoning.

Let us first assert the disjunctive proposition, that we must either tax ourselves or tax other nations, in order to support our own government, and then show *the necessity of accepting the first alternative* by *developing* the consequences of the second, to find that they are not acceptable. This is done as follows: First, the hypothetical judgment is asserted, that, if we tax nations, we must do this either by force or by beggary. now, we can show that this consequent *must be denied,* then antecedent must also be denied, and, accordingly, the *alternative,* that of taxing ourselves, be accepted.

But this consequent (forcing or begging other nations to pay our taxes) *must be denied because of its consequences—i.e., the dilemma* in which it places us. For, if we force others to pay our taxes, then we are a pirate nation, while if we beg others to pay our taxes, we are a pauper nation.

But the taxing of others, asserted by our opponent, *means* either the *forcing* of others or the *begging* of others to pay our taxes, in order to support our government. Therefore it means either that we are a pirate nation, or a pauper nation,—a choice that we cannot, in all conscience, accept.

Therefore, with this disjunctive conclusion thus denied, or not accepted, *its* antecedent, namely, that we force or beg other nations to pay our taxes, is *also denied,* as is in turn *its antecedent,* and, *therewith, the alternative, that we must tax ourselves, is asserted.*

This example, however, involves a material fallacy in the fact, both that it ignores the real point at issue concerning the nature of import duties, namely, the question, whether direct or indirect taxation is most advantageous, and, also, that it finally identifies the method of indirect taxation by import duties with taxing other nations. However, this material fallacy does not affect *the logical form* of the argument.

This method of establishing propositions by the dilemma is used very frequently in philosophy, both in getting at basic positions and in arriving at details. In certain cases it is used in connection with the *reductio ad absurdum*[1] and the principle of "presupposition by denial." To give an illustration,—and one, also, that is of importance for some of our future discussions—let us examine the question as to *whether the "natural numbers" are dependent on counting, in order to show that they are not.* Here we shall show that the proposition, *that the natural numbers are not dependent on counting,* can be demonstrated by the fact that the *opposed position reduces to an absurdity;* it presupposes its contradictory.

[1] Aristotle recognized the *reductio ad absurdum, Anal. Prior,* I, v.

There is the major premise, that, if numbers depend on counting, then "1," as that natural number which has no predecessor, became a fact with the *first* act of counting; while, if numbers are not so dependent, then "1" was not made a fact by the first act of counting.

But there is the minor premise, either that numbers are thus dependent on counting *or* that they are not.

The conclusion follows, either that "1" became a fact with the *first* act of counting, or that it did not so become.

Let us next examine the *consequences* of the first of the two alternatives stated by this disjunctive conclusion. To do this, let us *assume* that "1" *was made a fact by the first act of counting.* Now *counting* is an *act,* and an *act requires time,* and begins and ends. Then a time is implied, *before* this first act of counting took place, *when there was no counting.* In other words, the time period when there was *no* counting *precedes* the time period when the first act of counting took place. Therefore this time period—of the first act of counting—cannot be in correlation with the natural number "1" *defined* as the only natural number that has *no predecessor,* but must be in correlation with, at least, the natural number "2," which has a predecessor, namely "1." Therefore "1" does not depend on *counting.*

Our dilemma, therefore, leads to a conclusion consisting of a disjunction between contrary opposite propositions, one of which, namely, that "1" depends on counting, reduces to an *absurdity* in that it *presupposes its opposite,* namely, that "1" does *not* depend on counting. But *this opposite is the denial of the consequent* in one of the hypothetical alternatives of the major premise of the dilemma. Therewith, however, the antecedent of this consequent *is denied, and the opposite proposition, that numbers are not dependent on counting, asserted.*

By quite similar arguments—differing only in "matter," but not in form—one can demonstrate that the natural numbers do not depend on *consciousness* or *knowing in any form,* nor on physical things, nor on space, nor even on time.[2] All these entities are *numerical* in several ways, but the natural numbers themselves are facts that are quite independent of these other entities.

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[2] See Chaps. XLIII., VII.-X., and Chap. XLIV.

This is an important conclusion,—given here in illustration—since upon the *principle* which it involves there depends one of the greatest philosophical systems of history, the Platonic, with its acceptance of the reality of *universals,* of *abstractions,* and of *ideals* as *independent* of the concrete, particular "things" of the physical and mental world. It is, indeed, by the principle just illustrated that such ideals as justice can be proved to be *real* although they are never realized in a world of human beings that exist in space and time.[8]

CHAPTER XX

ANALOGY

Reasoning by analogy is a method that is frequently used in philosophy. For example, in a great many systems the entire universe is regarded as being *like* a living organism, and therefore as *having* a unity in the midst of its manifoldness, even as the parts of a plant or an animal, especially a highly organized one, influence one another and function together to make *one* living being. The same analogy is also frequently used to demonstrate, further, that the universe is *immanently* purposeful or teleological. Carried to its consistent outcome, this reasoning leads to the conclusion, that the universe *is,* indeed, an organism that manifests, perhaps, *all* the characteristics of life.[1] Indeed, if one finds that it is between the universe *and higher* organisms, such as ourselves, that the analogy holds, then the conclusion is reached, that this all-inclusive living being, the universe, is conscious in all that this may mean, in fact that it may be self-conscious, have memory, purposes, and aims, and even a moral consciousness, and, indeed, be a person and a self.[2]

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[8] See Chap. XLV.

[1] *E.g.,* by Paulsen in his *Introduction to Philosophy,* and by Bergson in *Creative Evolution.*

[2] The position of most modern objective idealists; cf. Chaps. XXXIV.-XXXVIII.

Another example of an analogy that is frequently used in constructing philosophical positions is the argument from the similarity of the universe to a man-made mechanism or machine. Such a mechanism reveals a delicate and nice adjustment and working-together of parts in order to bring about a certain result and thus accomplish a certain purpose. But this adjustment is brought about by a mechanician and contriver. By analogy, it is argued that in nature there are discoverable contrivances and mechanisms which are even more exquisite and more beautifully adaptative and purposeful as, *e.g.*, the eye, the heart, and, indeed, even the whole universe itself. Accordingly it is inferred that for the universe there is also a maker and a purposer. This conclusion is reached in this way by those who accept an external teleology as a position that means a *mechanistic* view of the physical and even the psychical universe, *and* the theistic view that there is a Deity, who, as in some sense outside the universe, is *its* mechanist, its designer, or its architect, if not its absolute creator.[8]

The logical structure of the argument by analogy becomes clear through these examples. Given two "things," as, *e.g.*, the eye and a watch, that are similar in certain respects, namely, in the mutual adjustment of structures and the functioning-together of parts, then are they not similar in further respects, *e.g.*, that the eye, *like the watch*, has a maker and a purposer? *By analogy* one concludes that this *is* the fact.

Stated formally this method of establishing premises is as follows: Certain entities, *A, B,* and *C,* are similar in respect to the characteristics, *x* and *y;* but *A* and *B* are characterized also by *z;* therefore *C* is also characterized by *z*.

Clearly the *presupposition* of this argument is the principle, *that whatever is similar in certain respects is also similar in others.* But it requires only the statement of this presupposition to make the fact equally clear, that partial similarity does *not of necessity* carry with it further, much less, complete similarity. In certain instances such further similarity is found; in other instances it is not. The most that we are justified in concluding, is, therefore, that if there is some similarity, there *may* be more. That it is even *highly probable* that there

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[8] Cf. Chaps. VI. and VII.

is more, can be justifiably asserted provided only that analogy ceases to be analogy, and becomes *induction*. Given two *typical* and *random* instances, *A* and *B*, with each characterized by an *x*, but with *x*, *e.g.*, *causally* or *functionally* connected with *y* *in these cases;* then, if other entities, *C*, *D*, *E*, etc., are characterized by *x*, they are also, with a high degree of probability, characterized by *y*.

The crucial problem, therefore, in employing the argument by analogy is that of ascertaining *whether or not* further similarity really holds or not. But if it does, there is *some other reason than analogy* for it so doing. It is by virtue of the fact that the several cases are instances of a law, a principle, a type, or a class, that similarity in respect to certain characteristics carries with it similarity in respect to others. Thus there is a resemblance in many respects between the rocks as we find them often in extremely distinct strata, *and* the layers of material that are deposited by the waters of the earth's surface today. Does the resemblance go further? The geologist advances the inductive theory that it does, but finds in these *two* sets of phenomena the results of the action of *a common cause*. Even as the sediments are to be observed today in a process of stratification, so were the stratified rocks slowly deposited in past ages, gradually to harden through the addition of other materials.

Can we discover by a similar procedure such features of the universe as will give *inductive* proof that it belongs to the type, *organism*, or to the type, *machine?* If we cannot, then to infer on the basis of analogy that the universe is an organism, or a machine, is extremely hazardous.

In general we may conclude, that, if reasoning by analogy is valid, then, paradoxically, this validity rests on some further, non-analogical basis. At best analogy can serve only as a basis for the suggestion that there is a certain range of *possibilities* within which to investigate. Thus the universe *may* be an organism, or it *may* be a machine; *but it may be neither*. On the basis of analogy one should neither accept nor reject these possibilities, but should hold his judgment in suspense regarding them until evidence and proof from other sources are at hand to justify a highly probable conclusion one way or the other.

III. ANALYSIS AND THE NEW LOGIC

CHAPTER XXI

FURTHER IMPLICATIVE SITUATIONS AND NEW METHODS OF ESTABLISHING PREMISES

THE discussion of the dilemma and of analogy completes the presentation of those tests and methods that are used in ordinary discourse and argumentation in order to establish premises and furnish proof. But such tests and methods, even if they are not discredited, as is, *e.g.*, the test by self-evidence, are inadequate to deal with all the problems and situations that the universe presents to the inquiring mind.

The tests and methods that we have been considering are those that, for the most part, directly constitute the logic of the tradition. This traditional logic is, as we have seen, the doctrine that emanated from Aristotle, and is essentially a logic of classes. As a logic of classes it is, as we have also seen,[1] based on *the physical thing* as that *model* in analogy to which *all* entities are conceived of and thought about. Accordingly the principles that form *the chief characteristics* of this traditional doctrine are: (1) the *relations* of similarity and of difference, of "member of," of additiveness, of inclusion, complete, partial, and negative, of causation, of inherence, of identity, and of contradiction; (2) the subsistence, by virtue of the first four relations, of *classes* (which are either included in or excluded from other classes completely or partially); (3) the *principle of identity* as applying to each individual and to each class; (4) *causation* as holding between individuals, and (5) *inherence* as holding between the qualities and their *substratum*, and finally (6) the *propositions* that are constituted by any of these relations,—in their function of relating terms.

This traditional Aristotelian logic has controlled the majority of the great historical systems of philosophy, and dominates much philosophy even at the present time. Indeed it exercises its influence even on some philosophers who endeavor to criticize both it and the systems that are built upon it.[2]

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[1] Chaps. I.-III.

However, in mathematics and in other fields of research in which appeal is made to fact, and not to authority and tradition, modern investigation has shown that *the logic of classes is not the only logic,* and that the situations described by it are not the only ones in which the relation of *implication* is present.

By way of sharply contrasting the two logics one may say that, if the logic of the Greek and Mediæval period was, with few exceptions, one of classes, the logic of modern exact science is one of *series.* In such isolated instances as the geometry of Euclid, the mechanics of Archimedes, and the astronomical theories of Aristarchus, Hipparchus, and Ptolemy, situations were recognized in which *series* and their logic are present. But this logic received *no* formulation either from Aristotle or from his successors in that tradition to which he was the chief contributor. Indeed, not until the Archimedean spirit of an appeal to nature was revived by such pioneers as Leonardo and Galileo, and continued by the host of their noble successors, was there opportunity for a break with the tradition and the use of the logic of series. Galileo[3] sounded the trumpet call for the coming advance when, with the insight of genius, he showed by experiment that uniformly changing velocity, *i.e.,* acceleration, is in a *functional relation* to the time series. In such a relationship there is present much of that logic which received at least partial formulation in the Calculus of Newton and of Leibniz, and which has received its more complete statement in the recent work of such men as Cantor, Dedekind, Peano, Russell, and Royce.[4]

The present knowledge of this modern logic makes it quite clear that the Aristotelian doctrine *wholly omits* the formulation of certain *logical principles* that subsist in certain situations. These principles are found where there are *series.* A series is an *ordered* class of individuals, in which each individual has a specific "position" in relation to the position of all the other individuals of the series. The Aristotelian logic is wholly incapable of dealing with such entities (series), since it recognizes no principle of *order* other than that of the positive or negative inclusion of one class in another. It accordingly is identical with the (tacit) assumption that individuals or parts are, in most cases, related *only additively to constitute a whole,* and is, therefore, *incapable of logically accounting for a whole that has properties different from those of the parts,* as, *e.g.,* has a chemical compound in contrast with its elements, and a living being in contrast with the chemical and physical forces of which it is composed. For, parts *added, i.e.,* related additively, give only a *sum, i.e.,* a whole which has properties *like* those of the parts.

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[2] See the modification and the underlying-reality theories of relations, Chap. XXVI., and the whole of Section 1 of Part II.

[3] Galileo Galilei, *Dialogues,* ed. by A. de Salvio, trans. by H. Crew, 1914; cf. Mach, *Science of Mechanics,* on Galileo.

[4] See references for Chaps. I.-III., XXVII., XLI.-XLIV.

In contrast with the traditional doctrine, the new logic recognizes, therefore, the principle, that a whole may consist of *two or more kinds* of parts, and that the *individuals* of *some* of these kinds *must* be related *non-additively* in order to constitute the whole. Such a non-additive relation is *asymmetrical,* and is present in every series.

But, further, the Aristotelian logic is also wholly ignorant of the *functional* relationship, which plays such a dominant rôle in modern exact science. Yet that it must be thus ignorant is to be seen from the fact that it excludes series, and a function is *a correlation between series.* Accordingly the traditional logic omits the use of the principle, that two entities can be *related* and yet be *independent.*[6] This principle is typified in the character of that relation which subsists between the *two variables* (series) of a function. The Aristotelian logic accepts and insists on the opposed principle, that *all* relatedness carries with it the *mutual causal modification* of the related entities.

Finally, the traditional logic omits the principle, that *a relation itself unites,* in some specific way, the entities related, so that a substance or substratum is *not* needed to hold these entities together and to mediate the relation. Indeed, *modern logic* centers very largely on the concept of *relations,* and the Aristotelian logic, in contrast, on the concepts of *substance* and

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[6] See Chap. XXVI., II., 1.

causation. This it must do, since *its model is interacting physical things,* with a physical thing defined as a group of qualities that inhere in a core-like substance.[6]

CHAPTER XXII

ANALYSIS

THE methods of the new logic are both analytical and synthetical. To analyze is to discover parts—in or of a whole,—and *also the character of the relations* between the parts, but, with this accomplished, there is also *synthesis.* For the preliminary to the synthesizing of parts *experimentally* is, after discovering the parts, to find *how* to put them together. But, if experiment is impossible in certain cases, then, with the discovery of parts and the specific character of their relatedness, *there already is synthesis.* This second method is *analysis and synthesis in situ.* We start with a whole, and in it discover parts; but the parts are left *undisturbed;* still we discover that, related in a certain way, they give the whole "back again." It is this method of analysis and synthesis *in situ* that is used in mathematics, geometry, and to a large extent also in mathematical physics, chemistry, and many other sciences. But it is an important characteristic of this method, that it is not only an analysis and a synthesis *in situ,* but also a means whereby one discovers facts *by implication and by type* rather than by the *specification* of each particular individual.[1]

Such a procedure may be illustrated by the example of that analysis of space which is made by geometers at the present time. In giving this example, some of the terms may be left undefined, since they will be readily understood in essentially their correct sense.

The space in which we perceive physical entities is found to consist of three dimensions, with each at right angles to the other two. Each of these dimensions is itself a straight line with no breadth or thickness, and thus quite unlike the pencil or crayon line by which it can be represented. But while this analysis of space is being made, these three dimensions are left *in situ,* since we cannot experimentally separate them. Further, any one finite line is of definite length *in relation to some unit of measurement,* and, therefore, can be analyzed into smaller lines, even as a foot is analyzable into twelve inches. Each such smaller line, however, is in turn analyzable into still smaller lines. Let this analysis, now, be continued and repeated up to that point beyond which our instruments of measurement do not take us, and it will be then discovered that the analysis can be "ideally" continued. This realization is accompanied by the further discovery that there is a *limit* which the smaller and smaller lines approach but do not reach, and that this limit is a *point.* Such a point, *as the limit,* has no length, no breadth, and no thickness. We cannot see or touch it, indeed, in some cases we cannot even specifically name it. Yet, *by discovering implications,* we find that there are such points, in fact, *a whole class* of them. This is *knowledge by type,* and not by specification.

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[6] See Chap. III.

[1] Cf. my "Defense of Analysis" in *The New Realism,* and the article by H. T. Costello, "A Neo-realistic Theory of Analysis," in the *Jour. of Phil., Psych., and Scientific Methods,* Vol. X., p. 494 ff.

But the analysis further reveals both *the character of the relation* between these points and their *number.* The *relation* is of the same type as is that relation which subsists between the positive integers, 1, 2, 3, 4, 5, 6, $n-1$, n, $n+1$, *i.e.,* it is *asymmetrical and transitive.* This means that, if the symbol $<$ stands for the relationship of "precedes," then, *e.g.,* $4 < 5$, but not $5 < 4$; *i.e.,* the relation is *asymmetrical;* also, that, if, $4 < 5$ and $5 < 6$, then $4 < 6$; *i.e.,* the relation is *transitive,* or "goes across" from 4 to 6. This means that, like the positive integers, the points of a line form a *series,* or that *the line is a series of points.* Further, the number of points is *infinite* in the sense that any finite part of a finite line contains *as many* points as the whole line does,—a discovery that is made by finding that, *in respect to points,* the whole line is in one-one correspondence with a proper part of itself, a "proper part" being defined as a part that is like the whole, *i.e.,* that is itself a line. Again, in this respect the line is like the series of positive integers, since, in this series, there are *as many even* integers as there are *odd and even*. In other words, the whole series is in one-one correspondence with a proper part of itself, namely, with the even integers, as it is, also, with the odd integers.

The example just given is illustrative of a type of whole that has furnished philosophy and science with many difficult problems from the time of earliest Greek thought to the present. However, some of these difficulties have come from the fact that the analysis which has been attempted has not followed *correct logical principles,* or that the *logic which is actually involved* in the entities analyzed has not been discovered. In some cases, also, while the analysis has been correct up to a certain point, it has been *incomplete.* Often, also, correct analysis has been *misinterpreted.* Accordingly, in the case of such entities as space, time, and motion, various *self-contradictions,* and peculiar logical situations called "antinomies" have appeared to be involved, and have, indeed, been considered to be back-handed proofs of the correctness of certain philosophical positions, as, *e.g.,* of Phenomenalism.

CHAPTER XXIII

ANALYSIS BY INCORRECT PRINCIPLES

An example of a philosophy that derives support from the difficulties that arise from a *faulty* analysis of space and time is Phenomenalism.[1] This is the position of the philosopher, Immanuel Kant (1724-1804), who is considered by some to be the greatest of all modern philosophers. In one part of his work, *The Critique of Pure Reason,* Kant develops four so-called "antinomies." By an "antinomy" Kant means *a pair of contrary-opposite propositions each of which can be both proved and disproved.* Each can be proved by the *reductio ad absurdum* of the other, *i.e.,* each is shown to be *presupposed by its own denial.* Thus it is, also, that each can be *disproved.*

The Second Antinomy is here selected in order to illustrate this peculiar situation and the way in which it is artificially created by *faulty* analysis. Kant's formulation of this antinomy is as follows:—

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[1] See Chap. XXIX.

THESIS

"Every composite substance in the world is made up of simple parts, and nothing whatever exists but the simple, or that which is composed out of the simple."

PROOF

"Assume that composite substances are not made up of simple parts. Then, if we think all composition to be away, no composite part will be left. And, by hypothesis, there is no simple part. Hence, nothing at all will remain, and therefore no substance. Either, then, it is impossible to think all composition to be away, or even after composition is thought to be away, there must be something left, which exists without composition, that is, the simple. In the former case, the composite cannot be made up of substances, for composition is merely an accidental relation of substances, which may be taken away without at all affecting their existence as permanent realities. But, by hypothesis, substances do exist, and hence we must adopt the other supposition, that the composite substances in the world consist of simple parts.

It directly follows, that all the things in the world are simple; that composition is merely an external state of those things; and that, although we can never take elementary substances out of their state of composition and isolate them, reason must think of them as the primary subjects, which exist as simple beings antecedently to all composition."

ANTITHESIS

"No composite thing in the world is made up of simple parts, nor does anything simple exist anywhere in the world."

PROOF

"Assume that a composite thing or substance is made up of simple parts. Then, as no external relation, and therefore no composition out of substances, is possible except in space, the composite thing must be made up of exactly the same number of parts as the space which it occupies. Now, space is not made up from simple parts, but consists of spaces. Every part of the composite thing must therefore occupy a space. But the absolutely primary parts of every composite thing are simple. Hence each of those simple parts occupies a space. Now, as every real thing, which occupies a space, contains within itself a number of parts that are outside of one another, and is therefore composite; and as this real composite thing is not made up of accidents, since these could not, apart from substance, be outside of one another; we must conclude, that simple substance is composite. . . ."[1]

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[1] Watson, *The Philosophy of Kant*, ed. 1895, pp. 160-161.

Kant's formulation of this Antinomy is, very evidently, rather obscure, but if it is subjected to a rather violent paraphrasing, it is found to mean:—

Thesis: Every (composite) substance is made up of simple parts as the condition for there being *substances* at all. For (proof) if there were *no* simple parts, and yet substances were derived by *composition* of parts, then we should have something "coming" out of nothing—which is impossible. *Therefore there must be ultimate simples* (such as are recognized in science today as atoms, or as electrons) in order that there may be substance at all.

Antithesis: No substance is made up of simple parts, since (proof) if a substance "occupies" space (and it does), it is as "repeatedly divisible," again and again, into ever smaller parts, as is the space which it occupies, *i.e.*, no "smaller part," such as an atom or electron, is absolutely simple, because, *as extended in space,* it is divisible, and therefore complex.

A clearer formulation of the same antinomy is one that does not run the danger of examining both *substance and space* "at the same time," but that considers *space* alone.

Such an *antinomy of space* may be stated in the form:—

Thesis: Space does not consist of *points,* revealed by analysis, but must consist of simple parts or *spaces* (lines, planes, or volumes).

Proof: Assume the contrary-opposite proposition, namely, that space does consist of *points.* But a point is unextended. Therefore, if extension be derived from points,—in other words, if space of one, two, or three dimensions is composed of points, then *something "comes" from nothing, i.e.,* the *extended* "comes" from the *un*extended. But this is (for Kant) impossible (perhaps because it is inconceivable). Therefore that entity to which the analysis of space leads must, by whatever name it may be called, be extended, *i.e.,* it must itself be space or extension.

Antithesis: Space does consist of ultimate, *unextended* simple parts, *i.e.,* of points.

Proof: Assume the contrary-opposite proposition, namely, that space does not consist of points, but of spaces, *i.e.,* of lines, planes, and volumes. Then, as *extensions,* these parts are divisible, as are their parts in turn, and so on, until *finally* unextended and absolutely simple parts are reached. Then it is of such parts, *i.e.,* of *points* that space consists.[3]

Kant arrives at this antinomy because he unknowingly accepts an *incomplete* and *faulty* analysis. This is due to the fact that his attention is directed exclusively to points, and that he *ignores* the character of the specific *relations* between the points. But points actually are related in a very specific way, and through the specific relations that hold among them (unextended) points *do* constitute an *extended* "something" which *is* space of *one,* two, and three dimensions.

To demonstrate this, one has but to grant the principle, that points are related *non-additively,* or more specifically, that they are related by *an asymmetrical and transitive relation.*[4] It follows from this principle, that that whole which results from points so related, namely, space of one, two, or three dimensions, has characteristics that are different from those of the parts, even so *different* as to "mean" that *extension* is derived from that which is not extended,—just as, by the same principle, that which is *chemical* (atoms) is derived from that which is *not* chemical (electrons), and that which is *life* (cells) is derived from that which is *not* life (physico-chemical forces). For it is only a whole which is an *additive* result of its parts, that must resemble these parts as to its characteristics. Kant, however, quite *neglected* all such non-additive relations. But he was guilty of this neglect because he was unknowingly shut up within the limitations of the Aristotelian logic, as this had come down in the tradition.

The modern Kantian, however, concludes that this second, as well as the other antinomies, confirms the main contention of the phenomenalistic philosophy, namely, that what we perceive and know is only *appearance,* and not ultimate reality. For,—he argues, that, while we undoubtedly perceive both space and spatial "things," nevertheless, since *by the antinomy* space or extension is self-contradictory, no better proof than this could be had, that *the perceived "world" of sense is mere appearance or phenomenon.*

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[3] Cf. Russell's discussion of Kant's Antinomies in *The Principles of Mathematics,* pp. 188, 190-193, 259, 458-461.

[4] See Chap. XLIII., VII., for details.

Modern analytical science, however, solves and disposes of the second antinomy of Kant by showing that *both thesis and antithesis* are true. It succeeds in doing this by discovering that, *e.g.*, the line is made up of *two* kinds of parts, namely, points *and* smaller lines. The former are not related additively to make up the line, while the latter *are* so related in certain respects. Further, the line has certain specific and distinct characteristics by virtue of each of the two kinds of parts. Thus, as made up of *points,* it is *infinite,* and may also be continuous, while, as made up of smaller lines, it is *finite.* It is in this way that both points and smaller lines *cosubsist* as the parts of a finite line, and with the result that finitude and infinity are not inconsistent, but quite compatible, as distinct characteristics of one and the same entity. Thus it is that modern analysis *rationalizes* the line, the plane, and the three-dimensional manifold, and avoids those difficulties which were met with by the earlier analysts.

Much of modern exact science depends upon principles which the analysis that has just been presented well illustrates. This analysis leads to the discovery *of both the parts and the relations* between the parts.[5] By it such wholes as time, space, motion, acceleration, and change in general are rationalized without any contradiction or antinomy appearing. Its results are, therefore, to be accepted at their face value, and are *not* to be regarded either as human inventions, or as mere appearances, and the like, until there are good reasons for so doing. And up to the present all the reasons that have been advanced for so regarding these results have been fallacious. They have been fallacious reasons, either (1) because, with the failure of the attempt to analyze and to rationalize in accordance with some *one* principle, *another* principle has not been tried; or (2) because the analysis has been *incomplete,* and, therefore, has not discovered *all* the parts and *all* the relations, one or both; or (3) because the actual results of correct analysis have been *misstated.*

Our second example will, therefore, illustrate those difficulties and failures that are conditioned by *incomplete* analysis, but that disappear if the analysis be made *complete.* The example is that of the incomplete analysis of the continuity of a line. Because of its incompleteness, the analysis readily leads to an *antinomy of continuity,* but an antinomy that as readily disappears if the analysis be made complete.

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[5] Cf. the writer's "Defense of Analysis" in *The New Realism.*

To demonstrate this, let us consider an instance of an analysis of the continuity of a line that endeavors to account for this continuity by means of the concepts of *gaps* and of *betweenness.* It is then found that it can be *both proved and disproved* both that the continuity consists in the *absence* of gaps, *and* also in their *presence.* This situation constitutes the antinomy:

Thesis: Continuity is the *absence* of gaps. Proof: Assume that the line is made up of points, so that, from any one point to another, there is a distance, or *gap.* Then, between these points there are other points, and so on. Therefore, if there are enough points to "fill in" all such gaps, the line is continuous. But there *are* enough points, since, not only between any two points is there a third point, but also, in any line or distance, there is an *infinite* number of points. Therefore the line is continuous in that there are *no* gaps.

Antithesis: Continuity is the *presence* of gaps in the line. Proof: Assume that the line is made up of points, and, therefore, since there is a point between every two points, that there are *no* gaps—all gaps being filled up. Now if, *e.g.,* the line is of unit length, so that the end points are in correlation with 0 and 1, then the other points are in correlation with the *rational fractions.* For it is the character of these fractions that between any two of them there is a third. But the rational fractions are also of such a character (as is well known) that the difference between any two of them is *finite.* Accordingly, if the rational fractions are correlated with the points, as they must be, if *any* two of them are correlated with two specific points by any scale of measurement, *then the finite differences* between the rational fractions stand for, or are correlated with, *not* points, but *lines, distances,* or *gaps,* between points. Therefore *continuity* consists in, not the absence of gaps, but their presence.

This whole antinomy arises from the fact that the analysis is made in exclusive reliance upon *intuition* and *self-evidence* rather than upon intellectual experiment and supplementary analysis and testings. To intuition the repeated "betweenness" of *points* does seem, perhaps, to explain or to define continuity, but it turns out, in fact, not so to explain or define this, but to lead to contradictions and antinomies. However, by a *supplementary and complete analysis,* in which something more than mere "betweenness" is discovered, the genuine character of continuity is revealed and all seeming contradictions in it are removed.[6]

We may next consider an example of getting into a difficulty, an antinomy, a paradox, through rationalizing and analyzing by means of an *incorrect* rather than a *correct* principle.

Zeno (about 490-430 B.C.) endeavored analytically to rationalize, or rationally to analyze *motion.* He tried to do this in a number of ways, but found that every analysis of motion revealed a contradiction somewhere and somehow. Accordingly he concluded that motion and change in general are only *illusions,* and that rest and permanence are alone real.[7]

One of his analyses consisted in reducing motion to an *absurdity.* In doing this Zeno assumed an instance of motion, say from a point *A* to a point *B.* Concerning this he then argued, that, *before* one travels this *whole* distance, one must travel the *first half* of it, and, *before this half, the first half of it, and so on.* Therefore, he concluded, one barely gets started, or, indeed, *one does not get started at all.* For similar reasons, he argued, one could never *quite* reach a destination, since, if one has gone half the distance, then, *before* one can go *the remaining half,* one must cover *half of it,* etc., so that there is always still remaining a fractional part yet to be traveled. *Therefore in neither case is there motion.*

Where, now, is the error in this reasoning? It must be admitted that analysis does show that a finite distance consists of, *e.g.,* halves, quarters, eighths, etc., and also that one must cover the first of these fractional parts *before* one covers the subsequent parts. The error in the argument consists, however, in *ignoring* the rather technical principle, that, if x and y be any two commensurable *finite* quantities of which $x < y$ ($<$ meaning "less than"), there is always a number *n* *such that* $nx = y$. Contrariwise the *error* consists in *assuming the false principle,* that, if $x = \frac{y}{n}$, where $\frac{y}{n}$ is any fractional part of *y*, then $n\left(\frac{y}{n}\right) < y$. As applied to the problem of motion, *this* last assumption means that, even with a start *admitted* in which the distance *x* is traversed in the time *t,* the distance, $y = nx$ $(y > x)$, *cannot* be traveled in the time *nt,* but only the distance, $y - \frac{y}{n}$, *can* be; in other words it means, that, if a certain distance *x,* say, $\frac{1}{4}$ of *y,* is traveled in the time *t,* then in the time, $t \times 4$, $\frac{4}{4}$ *y cannot* be traveled.

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[6] See Chap. XLIII., VII.-X.

[7] See Burnett, *Early Greek Philosophy,* 1892, p. 331 ff.; cf. Russell, *Scientific Method in Philosophy,* p. 165 ff., and *Principles of Mathematics* in a number of places (see his index).

Obviously, however, this conclusion is *false, if* there is such an entity as *uniform rate.* For, if there is, then, if *any start at all is admitted,* so that a finite distance *x* is traversed in the time *t,* at the rate $\frac{x}{t}$, *it must be granted* that in the time, *nt,* the distance nx $(= y)$ *can be traversed.*

One *cannot* avoid this conclusion by maintaining either that there is no start, or that the rate itself is changing. For, on the one hand, *finite* distances are implied by that which is the *limit* of the series of decreasing finite distances, namely, the point, at which there would be no motion, while, on the other hand, if there *are* finite distances, then, for some distance *x,* no matter how small, there is uniform velocity $\frac{x}{t}$.

However, that there *are* both finite distances *and* uniform velocities, is *presupposed* by those very assumptions which are used by Zeno to demonstrate that motion is impossible. But if there are *such* distances and velocities, then in *due* time, motion over any distance *y* is possible, even though it is true that any *first* distance $\frac{y}{n}$ must be traversed *before* the *second* distance is traversed, and, also, that *after* any first distance $\frac{y}{n}$ is traversed, the distance, *e.g.,* $\frac{y}{n^2}$, must be traversed *before* the next $\frac{y}{n^2}$ is traversed, and so on. For, although there is a *sum*, $\frac{y}{n} + \frac{y}{n^2} + \frac{y}{n^3} \quad . \ . \ . \quad \frac{y}{n^n}$, there is also the product $\frac{ny}{n}$. Zeno's whole difficulty, therefore, was incurred by *rationalizing* in accordance with an *incorrect assumption* or principle. It is evident, then, that when one rationalizes, one should use not only correct methods, but also *correct material principles* or premises. Otherwise it is quite easy to create seemingly real, but actually only *artificial* difficulties, and to reach *seemingly rational conclusions that contradict sense-given facts*, as, *e.g.*, the reality of motion.

At this point we may advantageously present still another example of an *attempt* at rational analysis by a false principle rather than by a correct one, of the consequent *failure* of this attempt, of the conclusions that are derived from such a failure, and, finally, of a consistent and satisfactory analysis of the same complex by a principle that is correct.

Ever since Zeno and the other Eleatics, certain philosophers have endeavored to analyze *change* by the use of the two principles of *identity* and *contradiction*.[8] This attempt fails, so that the conclusion is reached, that *change is only appearance*, and that rest and permanence are alone realities.

The analysis that is made may be stated as follows: Under the influence of the traditional logic, with its dominant concept of *thing*, the problem is stated in the form of the question, How can a thing change? In solution of this, it is found, that the *law of identity* applies to a *thing*, *i.e.*, that a *thing* is identical with itself. Change, then, if it is a fact, seems to mean that a thing *ceases* to be identical with itself and becomes something else, *i.e.*, that a thing, *A*, *becomes* its contradictory, *non-A*. At a certain instant, therefore, the thing *is*, or seems to be, *both A* and *non-A*, which "condition" violates the principle of contradiction, namely, that a thing cannot both be and *not* be, have and *not* have, a certain property. Change, therefore, involves this contradiction, or, it may be said to be *self-contradictory* in this respect, so that, with it tacitly assumed, *that that which is self-contradictory cannot be real*, it must be concluded that

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[8] F. H. Bradley, *Appearance and Reality*, Chaps. I.-V., especially pp. 45-48; also pp. 231-233.

change is not real, but only illusory and apparent, while *rest and permanence,* or, more generally, that which remains identical with itself, is alone reality.

Let us now, in contrast, examine the results of the endeavor to analyze *change* by the use of *other* principles than those of identity and contradiction, with these latter *supplemented,* however, and not displaced by such other principles. With our present knowedge of the *several specific kinds* of relations, of the precise nature of *continuity, infinity,* and the like, let us assume, at least for the sake of making the experiment, that change is a *continuous series,* with all that this means by way of those logical principles, entities, and relations that a *series* involves. The analysis that results not only does not show *change* to involve any contradiction, but also reveals the opposed analysis to be most *inadequate.*

In the first place, a *series is not the mere individuals* that are present in it, but *is* these *individuals related in a very specific* way, namely, by an asymmetrical and transitive relation.[9] Certain minor limitations of this statement may be neglected here. And, secondly, a series is *continuous,* if it is in one-one correspondence with the real numbers, namely, the series of positive integers, rational fractions, *and* irrationals *in order of magnitude.*[10] A series is thus quite consistent with the *self-identity of each of its members, while it is also more than these members.* In a continuous series no member is *next* to any other, and there is *no finite difference* between members, or from any one member to another member.[11]

If, now, we analyze change in accordance with this logic, we limit the use of the principle of identity, and accordingly give up that definition of change which makes it "the *ceasing* of something to be identical with itself" and the "becoming something else." For by this new logic, there is *no such ceasing,* although there are individuals, *A* and *B* (*non-A*), that remain identical with themselves. But there are not only these *two* individuals, but there are *in a continuous series* an infinite number of individuals between *A* and *B*. The *change,* then, *is the ordered complex or series of these individuals,* each of which, like the change itself, is identical with itself, and does *not* change. Change, therefore, is a different kind of entity from the individuals that are present in it, and is not to be analyzed by the *principles that apply to those individuals,* any more than the moral situation is to be analyzed by examining those universes of discourse from which morality is absent. In a similar way, "individual" and "change" are entities that belong, each to a distinct universe of discourse, with each capable of consistent analysis, unless the individuals are *simple,* each equally real, and neither to be confused with the other.

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[9] See Chap. XLIII.

[10] See Chap. XLIII., VII.-X.

[11] *Ibid.*

CHAPTER XXIV

MISINTERPRETATIONS OF CORRECT ANALYSIS

We now reach the third way in which doubt is thrown upon the reality of certain entities, *e.g.,* space, time, and motion. This is done by *misinterpreting* actual, correct results obtained by analysis. Misinterpretation is quite excusable, if it is not wilful, but quite unpardonable, if it is intentional. With Zeno it was not intentional when he analyzed, *e.g.,* the motion of the arrow, and interpreted the arrow's being at a *point* at an *instant* as *rest.* From this Zeno reached the conclusion that motion was only *a sum of rests,* and, therefore, was not real, but only apparent.

But Zeno also made a misinterpretation. The arrow's occupation of a point for an instant, is *not* rest,—whatever else it may be. To be at rest the arrow must be at a point for at least *two* instants, and if for two instants, then for an *infinite* number of instants between the two.[1] Zeno's conclusion therefore falls to the ground.

Among contemporaneous philosophers Bergson does not hesitate to *accept* Zeno's misinterpretation and to base an *anti-intellectualistic* philosophy upon it.[2] Bergson's argument is, that, because the analysis of motion leads to its contradictory, rest, the analysis *falsifies* that which is analyzed.[3] However, this specific analysis is regarded as *typical* of all analysis, and therefore all analysis is held to falsify. Accordingly, the position is arrived at, that, to get at fact, *one must not analyze at all,* but must rely upon the *immediate experience* of the (unanalyzed) whole, through intuition, emotion, and the like.[4]

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[1] See Chap. XLIII., VII.-X.

[2] In *Creative Evolution, Matter and Memory,* and *Time and Free Will.*

To refute Zeno and Bergson, and to undermine those philosophical conclusions which the latter bases on that (false) analysis of motion which he accepts, one has, however, only to state *correctly* the *actual scientific analysis of motion* that is ready at hand. This analysis shows that *the occupation of a point at an instant is neither rest nor motion.* It shows, on the one hand, that rest is the occupation of a point for two and indeed for an infinite number of instants, and, on the other hand, that motion is the *one-one correlation* of two points and therefore of an infinite number of points *with* two instants and, therefore, with an infinite number of instants. Or, stated in another way, motion is a *series of complexes* each of which is itself a *one-one correlation of a point with an instant.*[5] But in order to analyze motion in this way into *parts* that are themselves neither motions nor rests, one must accept the two principles, (1) that a whole can be made up of *two or more kinds* of parts, and (2) that, even though the parts of one type may be related *additively* to form the whole, those of certain other types *cannot* be so related. In anything that is an ordered class or series, this last must be the case.

Motion is a series. It consists, in the case of any finite motion, of smaller motions, but it also consists of another type of parts, each of which is the complex, *point-correlated-with-instant. These* parts, however, are neither rests *nor* motions; yet, as related *non-additively,* or, more specifically, as related asymmetrically and transitively, they *are* that whole which *is* motion, and which has properties that are different from those of the parts.

The results of this analysis furnish, therefore, *no* opportunity for a valid claim that analysis falsifies, on the ground that parts are reached which are the formal contradictory of, and inconsistent with, the whole. Parts that are different from the whole are indeed reached by analysis, namely, such parts as both instants and points, and also those *complex* parts each of which is an instant *related* in a one-one manner to a point. But none of these parts is of such a character that it is precluded from cosubsisting with a whole that is a non-additive result, and that has distinct and peculiar properties of its own. Such a consistent analysis demands, however, the principles that are formulated above, and that are accepted in the new logic, but ignored by the old.

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[3] Bergson, *Creative Evolution,* pp. 163, 303-313, and a number of other places. Cf. my "Defense of Analysis" in *The New Realism,* and H. S. R. Elliot, *Modern Science and the Illusions of Bergson.*

[4] See Chap. XV., IV., 2, and Chap. XL., VII.-IX.

[5] See Chap. XLIII., X.

All this presentation of the methods and results of the modern analysis of space, time, motion, and change is most important for our purposes. For it shows that, since such entities can be analyzed and rationalized in a manner that is quite *free from contradictions and antinomies,* we are relieved from attaching any more philosophical importance to them than we attach to the other innumerable facts of science and common sense. Nevertheless a great many influential philosophical systems have been founded in part upon the difficulties and contradictions that have been found in, *e.g.*, the infinity and the continuity of space and time, in motion and in change, and the like. Every philosophy must, indeed, consider these problems in connection with the cosmological problem. But today, with a consistent analysis of all these entities at hand, one is left free to consider the fundamental differences between philosophical systems *upon some other basis*—a procedure that will be adopted in considering, in the later sections of this volume, *the solution of philosophical problems.*

CHAPTER XXV

THE METHODS OF THE NEW LOGIC

SUMMARY

THE foregoing presentation of analyses that are made of such entities as change and motion, shows that there are logical methods and principles that are quite different from those of the logic of the tradition. Some of the most essential features of contrast between the two doctrines may now be advantageously summarized.

I. The new logic is opposed both to the psychologizing tendency, and to the pragmatic. The standpoint of the new logic is, that logical principles are present *in* entities, *i.e.*, that they are objective. Toward them one takes the attitude of empirical procedure and of discovery. This means that there may be in this richly endowed universe any number of different logical principles, entities, and situations. It is, therefore, the empirical study of entities that extends the field of logical science, and no one should be so brash as to *delimit* this field to *certain* logical principles, *thus to preclude* the possibility of its extension by *new* discoveries. Indeed, the necessity of maintaining the "open door" in this respect, is shown by the fact that it is impossible to solve certain problems by the principles of the old logic, but quite possible to solve these same problems by the new logic.

II. The old logic is a logic of *substance* and *qualities*,—of things with a *core* in which qualities inhere. The new logic is, in contrast, one in which these concepts, even if they are not given up entirely, play a minor part, and the concept of *relation* plays the major rôle.

III. The new logic emphasizes relational propositions, exemplified by "*A* is less than *B*." These propositions cannot be reduced to the subject-predicate propositions of the old logic, in which the predicate is interpreted to be a *property* of the subject.[1]

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[1] Cf. Russell, *Principles of Mathematics*, in various places, and Royce's Essay, the "Principles of Logic," in the *Encyclopedia of the Philosophical Sciences*.

IV. The new logic consists largely of those principles which are discovered by the analysis of *series*. This means, again, that the new logic recognizes many *types* of relations which the old logic quite ignores. The old logic makes no recognition of series, but only of *such wholes* as are additive, conceptual, causal, organic, thing-like (substance and attribute), syllogistic, and numerically single. The chief relations which the old logic accordingly recognizes are additiveness, similarity and difference, causation, inherence, "member of," inclusion, identity, and contradiction. It therefore omits *many very fundamental relations,* especially such as are involved in series.

Some of the most important types of *these* relations are the following: (1) Asymmetrical relations, defined as such relations, R, between a and b, as preclude the identity of the inverse relation, $\breve{R}$, with the original: *e.g.*, $a < b$, precludes $b < a$. (2) Transitive relations: *e.g.*, $a < b$, $b < c$ implies, $a < c$. Asymmetrical and transitive relations are recognized by the new logic as subsisting between *individuals* as well as between classes; but, by the old logic, they are recognized as subsisting *only* between classes; *e.g.*, if A, B, and C are three classes, and A is included in B, and B in C, then A is included in C. (3) Correlating relations, *e.g.*, between the men of a regiment and their guns, where *one and only one* specific gun is assigned to each man; such correlating relations are present in one-valued functions. (4) The new logic recognizes *functional* relations, where the old logic accepted only *causal* relations. The entities that are functionally related are variables, and a variable is a series. (5) A functional relation is identical with a specific type of relation that is compatible with both *relatedness and independence*, as is illustrated by the relation between time and motion. (6) The new logic emphasizes the method of using relations of implication to discover *types* of entities of which *no individual* is specifiable. Thus it is possible to discover that, *e.g.*, $\sqrt{2}$ *is* the limit of *two* series, the one series with individuals that are all *greater* than this limit, the other series with individuals that are all less than this limit, without it being possible to *specify* that limit, other than to say, that it is x ($x = \sqrt{2}$), and is such that $x^2 = 2$.

V. The old logic ignores this principle and method of discovering limits, although upon it is dependent the discovery, that a whole can consist of *non-finite* as well as of finite parts, *e.g.*,—in the case of a line,—of *points* as well as of *finite smaller lines.*

VI. The new logic solves the problems of infinity and continuity through its recognition of this principle of *limits* in connection with its recognition of asymmetrical, transitive, and one-one correlating relations.[2]

VII. The new logic recognizes and uses the principle, that most wholes are of that type in which the parts are related *non-additively* to constitute the whole. This allows for *different kinds of parts in the same whole,* each set of parts being related in perhaps *a specifically different non-additive manner.* Also, one class of parts may be related additively, while all others are related non-additively.

VIII. It results that one and the same whole may belong to *different universes of discourse,*—to one, by virtue of one kind of part, to another, by virtue of another kind. Accordingly those characteristics of a whole that are the relational result of *one kind* of part are *not deducible* from those that are the relational result of *another kind.*[3]

IX. The old logic accepts the principles of the inconceivability of the opposite and of self-evidence as norms of absolute truth; the new logic looks askance at these tests, and sets up propositions only as *postulates* from which to develop consequences.

BIBLIOGRAPHY

The following are some of the articles and books in which the principles, the details, and the application of the new logic are presented (cf. the bibliography for Chap. XLIII.): Cassirer, *Substanzbegriff und Funktionsbegriff;* Huntington, "The Continuum as a Type of Order," *Annals of Mathematics*, 1905; A. B. Kempe, "The Subject-matter of Exact Thought," *Nature*, Vol. XLIII., 1890, p. 156 ff.; Nernst, *Theoretische Chemie*, trans. R. A. Lehfeldt, p. 365; C. S. Peirce, "The Logic of Relations," *Monist*, Vol. VII., 1897, p. 353 ff.; Royce, "The Relations of the Principles of Logic to the Foundations of Geometry," *Transactions of the Am. Math. Soc.*, Vol. VI., 1905, p. 161 ff.; also "The Principles of Logic" in the *Encyclopedia of the Philosophical Sciences;* B. Russell, *Principles of Mathematics*, 1903, and *Scientific Method in Philosophy*, 1914; Whitehead and Russell, *Principia Mathematica;* Whitehead, *Introduction to Mathematics;* J. W. Young, *Fundamental Concepts of Algebra and Geometry.*

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[2] See Chap. XLIII., VIII.-X.

[3] See Chap. XLIII., IV., V., VI.

IV. THEORIES OF RELATIONS

CHAPTER XXVI

THE THEORIES OF EXTERNAL AND INTERNAL RELATIONS

I. THE FORMULATION OF THE THEORIES

A FURTHER point of contrast between the old *and* the new logic concerns the problem as to *how a relation relates*. The examination of this problem is of fundamental importance, since certain specific *theories* that are advanced in solution of it *logically condition* each of the great philosophical systems that we shall examine in detail in Part II.

This problem has itself come to recognition primarily because of the influence of that *relational* point of view which is the core of modern logic. For, if it is not substance and not cause, but events, disembodied qualities, and relations, especially the last, that form the basis of the new logic, then the problem very naturally arises as to *how a relation relates*.

Whatever the specific character of the relation may be, and to whatever *type* of relation it may belong, there are at the present time two main theories in answer to this problem. Each theory, further, is regarded by at least some of its adherents as holding *exclusively* for *all relations*.

These two main theories are, respectively, those of external relations and of internal relations. The latter theory is in turn subdivided into what may be called the mutual modification theory, *and* the underlying- or transcendent-reality theory. The adherents of each of these theories maintain that *their* particular theory can be established both by *induction* and by *other proof*, such as "the presupposition by denial."

In order to formulate these theories, we will use *a* and *b* for the two related terms, *R* for the relation between the terms, and the symbols | for "independent," $\longrightarrow$ for "influences," and $\underbrace{\qquad}$ for "underlying and mediating."

The theory of external relations may then be expressed in the form of $a \mid R \mid b$, meaning by this, (1) that, if two terms are related, neither term influences the other, (2) that the absence of either term would be *without effect* on the other, (3) that either term may come into being and into relation with the other term without affecting it, (4) that, accordingly, no term is *complex* by virtue of being related, and (5) that no third term, u, underlying $a\ R\ b$ in the sense of $\underbrace{a\ R\ b}_{U}$, is necessary in order to mediate the relationship between a and b. Briefly, the theory of external relations is, that *relatedness and independence are quite compatible.*

The theory of internal relations is a direct denial of these main propositions of the theory of external relations.

The "modification aspect" of the internal theory may be expressed by the symbol, $\overset{\longrightarrow}{\underset{\longleftarrow}{a_b\, R\, b_a}}$, meaning by this, that, if two terms are related, (1) each term *influences* the other, (2) that related terms are *complex*, (3) that either term out of relation with the other would be different from what it is in relation to that other, (4) that terms *are what they are by virtue of being related to other terms* (the organic view).

This modification theory of relations may, or may not be held together with the "underlying reality aspect" of the theory of internal relations. This last theory by itself is expressed by $\underbrace{a\ R\ b}_{U}$, meaning by this, that, if two terms are related, and whether they modify each other or not, there is an *underlying* or *transcendent* reality, U, to mediate this relation, indeed to make it possible at all.

Some of the adherents of the theory of external relations regard it as holding without exception for *all* terms and relations,[1] while others maintain that it holds only for some relational complexes.[2] In contrast with this, the advocates of the "internal theory," as it may be called, insist, according to that aspect to which they are inclined, either that the "modification theory" or the "underlying-reality theory" holds for *all* relations.

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[1] E. B. Holt in *The New Realism* and in *The Concept of Consciousness.*

[2] The writer in the present volume.

II. THE PROOFS OR ARGUMENTS FOR THE THEORIES OF RELATIONS

1. *The Theory of External Relations*

We may first consider the proof of the theory of external relations. This proof is twofold. One part of it depends on the result of an appeal to concrete fact; the other part *is* the demonstration, that the validity of the external theory is *presupposed* by *that very denial which it receives in the internal theory.* This last demonstration will be presented first.

To prove that there are terms which are related and yet do not affect, modify, or influence one another:—

First Proof. Let this proposition be *denied, i.e.,* let us assume that *any* two *related* terms do affect each other. Then these related terms are *complex.*[3] But, as complex, they consist of parts, which in turn are related. Therefore, these parts must, by the same hypothesis, *also* affect one another and be complex, and so on, in an *infinite series.* Ultimately, therefore, there must be *simple terms* that make all this complexity possible, but that are themselves not complex. Yet these ultimate, *simple* terms are related to one another. Therefore, as related, and yet as simple, they do not modify one another, but are independent,—in just this sense, namely, of *not* modifying one another.

Points and instants are examples of such ultimate simple terms, which, though they cannot be isolated or identified by *physical* experiment, are nevertheless discovered by an *analysis in situ.* It is also found by the same method that these entities are related, and yet that they do not affect one another, so as to make one another complex, although *as related* by specific relations they form specific complexes, namely, space and time respectively. The modern analysis of space and time demands, therefore, the theory of external relations,[4] and accordingly the thesis is proved, that at least *some* terms do *not*, as related, affect or modify one another, and are, in this sense, *independent*.

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[3] Cf. Russell, "The Basis of Realism," *Jour. of Phil., Psych., and Scientific Methods,* Vol. VIII., 1911, p. 158 ff.

[4] See Chap. XLIII., VIII.-X.

This same conclusion can also be established by induction, *i.e.*, we can get *instances* of related terms that do not affect one another. Thus it is evident that if, as a result of analysis, one accepts genuine points and instants, then these are to be regarded as *instances* of terms that are both related *and* independent. *But there are, also, other instances.* One of the most frequent practices of physical science is that of employing methods by which certain phenomena are isolated, and yet left *in situ, i.e., in relation both to one another and to other phenomena.* Pursuing this method, physical science discovers that, although *time* is related to space, to matter, and to change in general, it is, nevertheless, independent of these. In fact, in all physical science, time is the independent variable. In the case of a great many phenomena it is a leading problem, therefore, to find *how* "things" are related to, or vary with time. This problem occurs, *e.g.*, in the investigation of the motion of a falling body, in which case it is found that both the body *and* the motion are related to many other "things," but that the motion, in respect both to itself *as motion* and to the change of velocity, or *acceleration*, is related to time *as if* this were the only *referent*. The distance traveled by a falling body is the specific function, $s = t^2$, while the velocity is directly proportional to the time elapsed, and the acceleration is directly proportional to the time increment. Distance traveled, velocity, and acceleration are, therefore, *each related* to time, but the time is neither modified nor constituted by virtue of these relationships, as also conversely, neither the space, the velocity, nor the acceleration are *causally* affected by the *time*.

These instances are typical. Mechanics, chemistry, and physics are replete with cases of *functional* relationships between variables, each of which is a *series* of individuals, just as time is a series of instants. Each variable, also, is related to many "things," of which it is independent. There are, therefore, *complex* as well as *simple* entities that furnish data, in respect to the relatonships in which they stand, *for a generalization to the theory of external relations.* This proof by induction confirms, therefore, the first, indirect proof of the external theory, and together, both proofs show that the modification theory of relations is one that is at least *limited* in its range, if, indeed, it is not altogether invalid.

A similar conclusion is also reached as a result of the examination of both the argument and the empirical evidence for the underlying-reality theory of relations. This specific theory can be shown to *presuppose its contradictory,* or contrariwise, the theory of external relations can be demonstrated to be presupposed by it. To give this proof, let us *assume* that, in order that any two terms, *a* and *b,* may be related, there must be an underlying, unitary reality, *U,* to *mediate* the relation. Then, by supposition, this *U* is simple, and *not* complex, since, if it were complex, its parts would, by hypothesis, require *another* *U* to relate them, and so on indefinitely. Let us assume, therefore, that *U* is absolutely simple, and not complex. But even then, as the mediator of the original relation, it is *related* not only to *a, b,* and *R,* but also to the complex, *a R b,* so that, again, *by the original assumption,* there is required still *another* *U* to mediate *this* relation, and so on in an infinite regress. For every *U* that is thus reached, since each such *U* is related to that which it mediates, there is implied still *another U.* Therefore *each such U is only a member of a series, and not such an all-including and all-mediating U* as is sought. The result is, that no all-relation-mediating *U* is ever arrived at. Even on the basis of the original assumption, which is thus shown to be self-contradictory, it is only the *series* as a whole that includes *every U.* But an infinite series already subsists in *its unity if* specific relations subsist to relate its terms. These relations are (1) one-one correlating relations *between* proper part *and whole,* and (2) asymmetrical and transitive relations among the *individuals* of both whole and part. *But* another term, outside the series, is, by empirical methods, not found to be necessary, in order to give the series unity. The relations already present suffice to give it this. We may conclude, therefore, that, in the case of *a* being related to *b* (*i.e., a R b*) the relation itself *is sufficient to give all the unity* that there is, even as is the case with the infinite series. No underlying *U* is needed either to give unity to, or to mediate the relation between, the related terms. But that the relation is itself *thus sufficient,* is precisely the position of the theory of external relations.

The supplementation of this *indirect proof* of the external theory by the empirical *disproof* of the underlying-reality theory is remarkably easy. Strictly empirical procedure, either experimental or otherwise, discloses not a single instance of a *one "something,"* of a *U,* that *mediates* the relation between two or more terms. Indeed, every *so-called* instance proves to be only one that is *inferred* from the tacitly or explicitly *assumed validity* of the underlying-reality theory. Thus, *e.g.,* previous to Locke and Berkeley, the position was commonly taken, that in every *physical thing, a substance-like substratum* or core held the qualities together, but Locke was not very certain of the presence of this *substratum,* and Berkeley denied it entirely for physical things, though he held to an analogous substance for ideas. Hume, however, denied even such a soul, or spirit, and held to the factuality only of impressions and ideas.[5] Physics of the present day follows Berkeley's position, and psychology follows Hume's, so that it is *disembodied* qualities, events, and relations that are now studied in these sciences. Indeed both physics and mechanics, in arriving at general laws, disclose functional relations that are instances of the more general *theory* of external relations. This theory has, therefore, at least *some* range of application, while the underlying-reality theory seems to have no validity at all. Whether, now, this is the case also for the modification theory we shall shortly consider.

The basis on which the theory of external relations rests is, accordingly, the twofold one, (1) that it is *presupposed by its own denial* as this is made in both *aspects* of the theory of internal relations, and (2) that it is confirmed by induction from positive cases of related terms in which no term modifies others, *and* no underlying reality is found empirically. Therefore, at least *some* terms are related in accordance with the theory of external relations. Are *all* terms so related, *or,* are some terms related in accordance with the principles of the modification theory?[6]

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[5] See Chaps. XXX. and XXXI.

[6] The theory of external relations is accepted, and evidence and proof

2. *The Modification Theory of Relations*

The adherents of this theory usually maintain that it is of universal validity, to the complete exclusion of the theory of external relations, though not of the underlying-reality theory. This last theory may, or may not be held together with the modification theory.

The proof that is presented for this modification theory is twofold. One proof is the (attempted) *reductio ad absurdum* both of the theory of external relations and—for *some* related terms—of the underlying-reality theory in the form that has just been presented. The other proof *seems* to be inductive.

Let us first consider the *argument* by which it is attempted to reduce the theory of external relations to an *absurdity.*[7] To give this proof, let us *assume* the external theory to apply to the relational complex, *a R b*. This means that, though *a* and *b* are related, they are also *independent.* Then, so the argument goes, the *absurdity* appears, that the terms *a* and *b cannot be related at all,* on the ground that, if they are (assumed to be) independent of each other, they are also independent of *R* (and

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of it are presented by the following writers: Perry, in *The New Realism*, in his essay on "Independence"; Russell, *Principles of Mathematics*, p. 99 ff. and p. 221 ff., and in several other places; "The Monistic Theory of Truth," *Philosophical Essays;* "The Basis of Realism," *Jour. of Phil., Psych., and Scientific Methods*, Vol. VIII., p. 158 ff.; "On the Nature of Truth," *Proceedings of Aristotelian Society*, 1907, N. S., Vol. VII., pp. 28-49; Spaulding, "A Defense of Analysis" in *The New Realism*, p. 155 ff.; Marvin, *First Book of Metaphysics*, Chaps. VII.-XIII.

For instances of the independence of related terms and for a discussion of this problem see Chap. II. of this volume; also Perry, "A Realistic Theory of Independence" in *The New Realism;* W. H. Sheldon, "Chance," *Jour. of Phil., Psych., and Scientific Methods*, Vol. IX., 1912, pp. 281-290; E. V. Huntington, "Sets of Independent Postulates for the Algebra of Logic," *Transactions of the American Mathematical Society*, Vol. V., 1904; J. W. Young, *Fundamental Concepts of Algebra and Geometry;* Stout, "Alleged Self-Contradictions in the Concept of Relation," *Proc. Aris. Soc.*, Vol. II., pp. 191-192.

[7] This is very definitely attempted by Bradley in *Appearance and Reality*, pp. 1-120, and by Joachim in *The Nature of Truth*, especially in Chap. III. The position is also accepted essentially without any examination of its grounds and almost as self-evident by Bergson in *Creative Evolution*, pp. 9, 11, 160-163, 188, 303, 338-340, and by Wm. James in *Pragmatism*, p. 134 ff. Royce, in *The World and the Individual*, in the first four chapters, especially Chaps. III. and IV., maintains it in the form of the principle, that *relatedness implies dependence.* This is also the position of Lotze, *Metaphysics*, I., trans., ed. by Bosanquet, Chap. VI., pp. 166-169. Bradley, in *Essays on Truth and Reality*, 1914, does not depart from his earlier position.

so are not related).[8] Accordingly it is to be inferred that in order to get or to have the terms related—which is *the desideratum*—there must be *other* relations to relate the original relation *R* to *a* and to *b*, and also, as alone consistent with this implication, *still other relations* to relate these relations to one another, and so on, in an infinite series.[9] But, it is maintained (though falsely), an infinite series cannot by its very nature ever be completed. Therefore it is inferred that, *by the principles of the theory of external relations, terms are never related.* Accordingly it is inferred, conversely, that, *in order to have terms related,* or to explain *how* a relation relates, *one must accept the "internal theory"* to the effect, that related terms are *dependent* in the sense that they *influence, modify, and affect one another.*[10] As a result, all terms *become,* or *are* complex, indeed infinitely so; for, on the one hand, any so-called simple term is a complex of the effects produced in it through its being related to all other terms, and, on the other hand, since these effects are in turn related, they affect one another, and so are also complex.

In *criticism* of this modification theory of relations, one may attack either the foregoing argument, or the position that the theory is of universal applicability. But that the theory is of limited validity and applicability is shown by the fact, that it leads to the position, that *all terms are complex,* and thus becomes self-contradictory. For complexity presupposes at some juncture *ultimate simples* as the components of all else that is complex, and *such simples, though related, must be unmodified by and independent of one another.* The argument for the modification theory thus leads to the limitation of the theory itself.

But, quite apart from this outcome, the *argument* for the theory may itself be refuted as regards its logical procedure. For, at its very beginning, *the very question at issue is begged,* when it is *assumed* that the theory of external relations means that, *if terms are independent, they cannot be related, and that the relation does not relate them.* All the rest of the argument proceeds from this unwarranted assumption. Accordingly the argument is *not in the least a disproof* of the theory of external relations, but is *only a denial,* and merely to deny is never to disprove.

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[8] Royce, *ibid.*

[9] Bradley, *Appearance and Reality,* pp. 32-33.

[10] Maintained by all the adherents of this position.

Is there any proof or evidence at all, therefore, for the modification theory of relations, by which this theory can be shown to hold even for *some* instances of related terms, if not for all? The theory certainly does not hold for simple terms, nor for those complex terms which, like time, space, motion, and acceleration, are either *series* or functions in the precise sense of these terms. But for a specific kind of complex term, namely, for so-called *organic* wholes, it does seem to hold.

An example of such wholes is any individual plant or animal. The parts of these wholes are related, and they do *interact causally*—though, perhaps, not because they are related, but because this is the *specific* kind of relation between them. Thus, *e.g.,* the lungs, heart, muscles, and brain of a vertebrate causally influence one another, and develop in mutual causal dependence, in the growth of every individual from a fertilized ovum to maturity. But living beings, both plant and animal, also causally interact with their physical environment. In fact it would *seem* not only that organic beings, but also that the "things" of the inorganic world are related to and causally influence one another. Yet, if this means that the modification theory of relations is here applicable, it does not mean, however, that this theory applies to every complex of related terms. For *some* entities, as, *e.g., motion-related-to-time,* are complexes whose parts are related, yet are causally *independent, i.e.,* whose parts are related in accordance with the theory of external relations. In certain complexes, furthermore, certain terms may be related, and yet be independent, while *others are related causally.* Thus, *e.g.,* the parts of a shooting sky rocket are in causal (chemical) interaction as the rocket moves, and yet the mass and the changing velocity of the rocket are *in a relation of independence* to the chemical composition, to the time, and to the "path."

This distinction corresponds to that distinction which subsists between *causal* and *functional* relations. Functional relations subsist by virtue of a specific correlating relation between the individuals of two series. Thus the changing velocity or the acceleration of a falling body is a function of the time, but it (the acceleration) is also, as are the time and the space, a *series*. Causal relations, on the other hand, subsist between complexes that are *not* series, *although* functional relations, series, and the individuals that are in the series, may be *present in* these causally related complexes. For example, any living organism is a complex of organs and processes that are *causally* related, but, *within* these organs and processes, there are *strictly functional relationships of the specific kind that chemistry, especially physical chemistry, is concerned with.*

This position, namely, that there are certain wholes which consist of complexes which are related dependently and causally, but that also, within these complexes, there are still *other complexes which are related and yet are independent,* agrees with the result previously reached, namely, that the modification theory of relations "rests on" and presupposes the theory of external relations. While for each theory there is therefore a field within which it holds, the theory of external relations is, in this respect, *fundamental* to the modification theory.

3. *The Underlying or Transcendent Reality Theory of Relations*

The criticism and brief formulation of this specific theory have already been given.[11] No concrete instances can be found, *other than by deduction from the theory itself,* of an *extra* entity that *mediates the relations between other entities.* Yet the theory is one which, either as explicitly stated or as tacitly presupposed, has had a dominant influence in theology, philosophy, and logic down to the present time, and in science during the middle ages. Upon it, indeed, are based, *e.g.*, certain of the proofs of the existence, or subsistence of a deity,[12] as are also certain doctrines as to the nature of the soul,[13] and much of the traditional Aristotelian logic.[14] However, the theory, *as a theory,* did not receive explicit recognition and formulation until the post-Kantian philosophy appeared, but it was then advanced as the very core of what was *styled* a new logic, namely, the Hegelian.[15] Nevertheless, this new logic was really only a development of the old, since it was derived by a specific use of the Aristotelian principle of contradiction.

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[11] This chapter, II., 1.

[12] See Chaps. XXXIV.-XXXVIII.

[13] In Locke, Berkeley, and Kant; see Part II.

[14] Chap. III.

Thus, by the entirely *formal* use of this principle, there must be formed or thought, for every term without exception, the formal contradictory, *i.e.*, for every *a*, whatever *a* may be, there must be thought a *non-a*. This relation seems to be one of *necessary*, logical connection, which may be stated in the form of the propositions, that for every *a* there *must be* a *non-a*, or, that *a cannot be without non-a*, or, that *a implies non-a*. But, if *a cannot be without non-a*, then the two are *inseparable*, and, therefore, form a *unity*. The important problem for the theory therefore is, *Where* is this unity? or, *What* is its *locus?* And the answer is, that the unity *cannot* be identical with, or be at the "level" of, *a* and *non-a*, since these are *numerically two*. Therefore it must be *at a different level*, either *transcendent* to or *underlying both a* and *non-a*, and, also, it must be an absolute unity,[16] and not a concealed complexity, since, if it were *complex*, the problem would be repeated in regard to the *relatedness* of the *terms* of this complex. This absolute unity may be symbolized by *U*, and, accordingly, the theory itself be expressed by the symbol $\underbrace{a\ R\ non\text{-}a}_{U}$.

As an example of the *use* to which this theory is put, we may consider the demonstration, that *change is necessary*. This demonstration is not difficult to make, since, if *a cannot be without non-a*, and, if change means that *a becomes b*, *i.e.*, *non-a*, then it follows, that change *must be*. This is, indeed, logically the very demonstration that Hegel himself made of the *necessity of change and evolution*.[17] It means that for Hegel and his faithful followers, not only must there be change, evolution, and progress, but also that these are *logical* in character, and that, underlying them, there is *an absolute unity.*

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[15] See Chaps. XXXIV. and XXXV.

[16] Among the prominent modern philosophers who hold this position are Fichte and Hegel (see Chaps. XXXIV.-XXXVIII.); Bradley, *Appearance and Reality*, p. 520 ff.; Royce, as the outcome of his discussion in *The Spirit of Modern Philosophy* and *The World and the Individual;* E. Caird, *Evolution of Religion*, Vol. I., p. 67 ff.; Calkins, *Persistent Problems of Philosophy*, p. 418 ff.; T. H. Green, *Works*, Vol. III., p. 45.

[17] See Chap. XXXVI.

Another example of the application of this theory is one in which it is demonstrated that there is an underlying and transcendent Unity for the whole universe. To give this demonstration, let us select the contradictory terms, *self* and *not-self* (or indeed any other pair of formally contradictory terms), and then ask, if *everything is not either one's self or not one's self?* Then, *by the theory,* must there not be One and only One Being that underlies and is transcendent to *all else,* and that is of a different order from the related terms?[18]

Still another example of the application of this theory shows how, by means of it, one can transcend time, and get to the *timeless,* and perhaps to the eternal. For, if *the present* be *a,* all other time, past and future, is, as not-present time, *non-a.* Therefore, *by the theory,* there is a *U* that is different from both *a* and *non-a,* and that is in this respect *neither past, present, nor future.*[19]

The underlying-reality theory of relations can be maintained as valid, at the same time that one also holds, that *some* related terms modify one another, and that others are externally related. Conversely, however, if one accepts the theory of external relations, there is no necessity for accepting the underlying-reality theory, since the former theory means, that the fact that a relation relates its terms accounts for all the unity that there is in the relational situation.

Criticism of the Argument

The argument for the underlying-reality theory of relations has already been criticized,[20] and need only be referred to here. If a *first U* is found to mediate the relation between *a* and *non-a,* then, since this *U* is related to the complex, *a R non-a, another U* is in turn implied to mediate this relation, and so on in infinite series. Therefore, either an *ultimate underlying U is never reached,* or, if it is, then, although it is related to the *complex* of the *preceding complexes,* this relation does *not demand an underlying reality* to mediate it. But, if there is this one exception, then *no* relation need demand an underlying entity to mediate it, and the whole theory falls to the ground.

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[18] Well illustrated by Bradley's arguments for an Absolute in *Appearance and Reality.*

[19] *E.g.,* Bradley's and Royce's Absolute.

[20] This chapter, II., 1.

The only seemingly possible *inductive* evidence for the theory is derived from the examination of *concepts.* Thus if one take either the psychologizing or the pragmatic view of concepts,[21] he might go so far as to maintain that the individuals of what we now regard as a class, *e.g.,* the class of *living beings,* would *not* be so related as to form this class, *if we did not relate them.* For relations of similarity between "things" whereby they form classes, are, in accordance with these two positions, either created or invented by having "things" *get into relation* with a consciousness, or with something, such as an organism *that relates them.* But if this is the case, then at least *these relations,* to a consciousness, or to an organism, would *not* be so created or invented, since *they* must subsist *before* other relations could be *created* or *invented.* But, if *some* relations are thus *independent,* then, clearly, *others* may also be—especially those relations of similarity by virtue of which there *are* classes. Classes, therefore, would seem to be independent of a relating consciousness or organism.

However, if a relation is, in this manner, *an objective entity* that relates "things," then it is specific relations of similarity that unify individuals into specific classes, so that with the unity of the class accounted for in this way, there is neither the opportunity nor the *necessity* for a transcendent or underlying unity either to perform the function of mediating the relation, or to give the class unity. Thus, *e.g.,* in the case of the class of *living beings,* there are (1) the individuals; these are related by a number of specific relations of similarity. Then there is also (2) the class, *as a class,* whose members are *unified objectively* by each of these specific relations. But (3) each one of the relations which thus organizes the individuals into a class is distinct *both* from the class as a whole, *and* from its individuals; yet these relations, *e.g.,* similarity in respect to *structure,* are *not,* in the usual sense of the term, *transcendent,* either to the class as a whole, or to its individuals, even as the class and the individuals are not "outside" of themselves in any sense. The specific relations of similarity which thus organize the individuals into a class form, or are, *the objective concept.*

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[21] Chap. XIII.

It goes without saying, perhaps, that this objective concept can be known quite as well as can either the individuals, or the class as a whole, and such knowledge can be called an "abstract idea." Humanity, triangularity, bravery, are examples. On the other hand, the knowledge of the class as a whole is a "general idea,"—human being, triangle, brave act being examples. By virtue of abstract ideas we can, without knowing each individual specifically, know about classes as a whole, *i.e.,* we can know that there *are* individuals *of a certain type,* because they are *related* in a specific way. We can know *any* individual, although, perhaps, no particular one. In fact, in certain instances, not only do we not need to know all the individuals *specifically,* but, in many cases, we cannot so know them, for one reason or another. For example, because counting is a psychological process requiring for each act of counting a specific time, we cannot, by *counting,* know *specifically all* the individuals of an *infinite* class. Yet we do know that there are infinite classes, and that there are individuals which are members of these classes. We thus again discover the important difference between knowing "things" as individuals, *i.e.,* by *specification,* and knowing them by *type,* by law, by organizing concepts, or by *intension,* as it is technically called.

That *the concept of a class* should be that *underlying reality* which mediates the relation between the members of the class is thus disproved. Yet that the concept performs this function is precisely that view to which the underlying-reality theory has been driven by continued and repeated criticism. The result of this criticism has been, when the adherents of the underlying-reality theory have desired to get to an *ultimate and fundamental unity* underlying the whole physical and mental universe, that they have given up "making" this unity either physical or mental, and have been compelled to make it a bare *concept.* But, by the foregoing criticism, if this ultimate concept were a fact, it would be only that concept or relation of similarity which *organizes a universe* into a whole, and the universe would have only *as much unity as there is similarity.*

Unless one could prove, therefore, that *any two terms* must be *similar* in order to be related, the universe or totality of entities might consist of related, yet of extremely, perhaps of *wholly dissimilar* "things." Or, there might be *many kinds* of "things," *but no one kind of these kinds,* such as, *e.g.,* mind, or matter, or existence. However, one cannot exclusively prove that terms, in order to be related, must be *similar.* Such a conclusion follows only from the postulate, in accordance with the modification theory of relations, that *related terms affect one another and so cause one another to be similar.* But this theory has been shown *not* to be universally valid. For it presupposes that terms, in order that they may be modified, must first be *unmodified and yet related.* But such ultimate unmodified, noncomplex terms might be absolutely different, and still be related. Yet, if terms can be related and yet be wholly dissimilar, there is no *relation of similarity* that relates them.

We conclude, therefore, that *inductive* evidence for the validity of the underlying-reality theory of relations cannot be obtained from the examination of concepts. The concept is either *the organizing relation,* known in an abstract idea, or the *class as a whole,* known in a general idea, but it is not something more than this relation and this class. There is, therefore, no one concept, which, as outside the universe, also unifies it. Indeed, empirical evidence shows that the universe is *not one class, or one kind of "things,"* but that it is many kinds.[22]

CHAPTER XXVII

TYPES OF RELATIONS, OF WHOLES, AND OF UNITIES

I. TYPES OF RELATIONS

SCIENCE and philosophy are both concerned with relations between "things," and, therefore, also with *wholes,* which are identical with *parts* as *related* in *specific* ways.

Some of the important *types of relations* have already been presented, but these types may here be advantageously summarized, using R for *relation*, and a, b, c, and d for terms.[1]

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[22] See Chap. XLIV., II.

I. Every relation has an *inverse*. Thus, if a is *above* b ($a\ R\ b$), there is *the inverse relation*, $\breve{R}$, b *below* a; also, if $a = b$, there is the inverse, $b = a$, where R is the relation of equality.

II. Relations are also classified as *dyadic, triadic, tetradic,* etc. A dyadic relation is expressed by the symbol, $a\ R\ b$; a triadic, by $R\ (a\ b\ c)$; a tetradic, by $R\ (a\ b\ c\ d)$. An example of a triadic relation is *the relational complex,* sender of a message—message—recipient.

III. Further differences among relations are distinguished by the names *symmetrical, non-symmetrical,* and *asymmetrical,* and *transitive, non-transitive,* and *intransitive.* These different types may be best considered in the case of *dyadic* relations.

Symmetrical relations are such as are identical with their own *inverse; i.e.,* they subsist, if $\breve{R}$ is the same as R. Examples: equality, similarity, difference, contradiction, consistency.

Asymmetrical relations are such as always preclude the identity of the inverse with the original relation. For example, if a precedes b, it is precluded, that b should precede a. Further instances are: "greater than," before, "ancestor of," and "father of." Asymmetrical relations are sometimes called *totally non-symmetrical. Partially non-symmetrical* relations are recognized by Royce and Russell,[2] these relations being such as do *not always* preclude the identity of the inverse with the original relation. Thus, if a is *friend of* b, it may be that b is *friend of* a (symmetrical), but it may also be that b is not a *friend of* a (asymmetrical).

Transitive relations are *such that,* if they hold between a and b, and between b and c, they also hold between a and c. Equality, "ancestor of," and "older than," are examples. *Intransitive* relations are such as are never transitive. Thus, if a is the mother of b, and b is the mother of c, it is precluded that a should be the mother of c.

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[1] Cf. Russell, *Scientific Method in Philosophy*, p. 40 ff., and p. 124 ff., and *Principles of Mathematics* in various places (see his index); also Royce in his essay on "The Principles of Logic" in the *Encyclopedia of the Philosophical Sciences*, p. 97 ff.

[2] *Ibid.*

Non-transitive relations are such as are not transitive in some cases, but are transitive in others. Thus, in the case of men, if *a* is half-brother of *b*, and *b* is half-brother of *c*, *a* is not half-brother of *c*, *unless a*, *b*, and *c have a common parent*, which is *not* necessary.

IV. Relations are also distinguished as *one-one*, *one-many*, and *many-one*. If a relation, *R*, holds only of *a* to *b*, but not of *a* to *c*, *d*, etc., then it is a one-one relation. Thus, if *a* is the *twin* of *b*, *a* is not the twin of *c*. One-one relations are present in the case of correlated *classes*, as, *e.g.*, in the possession of a gun by each man of a regiment; also in correlated *series*, as, *e.g.*, the occupation, by the *center of mass* of a moving particle, of *one and only one* point *at each* instant. If a relation *R* holds between *a* and *b*, *c*, *d*, etc., it is one-many, while the inverse relation of *b*, *c*, and *d* to *a* is many-one. For example, *rest* is a relational whole that is generated by a one-many relation between one point and an infinity of instants, and, conversely, by a many-one relation between an infinity of instants and one point. *Existentially* this relational whole is generated, *e.g.*, by the center of mass of a body as it occupies a point for many instants.

These several types of relations are found not only among dyadic relations, but also among triadic and tetradic relations. Thus the relation of similarity, which is symmetrical, holds between the *members of a class*, and the class subsists by virtue of this relation. The class is thus independent of the order of its members; $R\ (a\ d\ c\ b)$ is the same as $R\ (a\ b\ c\ d)$—*as a class*. If, however, *a*, *b*, and *c* are each a class as, *e.g.*, are Frenchmen, men, and mortals, then the triadic relation, *R*, of inclusion, $a < b < c$, is asymmetrical and transitive. In the case of a mere *collection or aggregate*, in which the individuals are related by the *minimum* of all relations, namely, the additive relation, as expressed by "and," the relation is symmetrical and transitive.

II. TYPES OF WHOLES

If there are terms *and* relations, then there are also *wholes;* or, conversely, if there are wholes other than absolutely simple entities, which consist of no parts at all, then there are terms *and* relations. Indeed, a relation may be defined as an entity which subsists by virtue of there being complex wholes. The chief types of wholes are as follows:—[3]

I. *Mere aggregates or collections.* In these wholes, in which the parts may be any type of entity whatsoever, the relations between the parts are such as are expressed by mere *"and."* No other relations, such as the relations of similarity or of causation, or those relations that generate *order,* namely, asymmetrical and transitive relations, need be present. As an example, this page *and* a chimæra *and* the number 3 *and* last evening's sunset form such a whole.[4]

II. *Classes.* A class subsists by virtue of a relation of *similarity,* which is symmetrical and non-transitive, between individuals, which individuals may be either simple or complex. Together with the relation of similarity, there subsists in all classes the *conjunctive or additive relation* expressed by *"and."* Further relations, such as those which generate order, are, however, not necessary to the subsistence of classes. Any individual either bears the asymmetrical relation, ϵ, of "belonging to" a specific class, or does not bear, or stand in, that relation to that class. *Vertebrates, triangles, atoms,* are examples of classes.

III. *Series.* In a series there are relations of conjunction, of similarity, and of "belonging to." Yet a series as such subsists *only* if its terms are also related by an asymmetrical and transitive relation. The terms of a series may be absolute simples, such as the points of a line, or complexes, such as the lines of a plane. Examples of entities that are series are: space of one, two, three, or n dimensions; also time, motion, acceleration, and any qualitative change. Such series are found to have the same characteristics as have certain specific series among the *real* numbers, positive and negative, and zero.

A series is *infinite* if a one-one relation relates the individuals of the whole series to the individuals of any part *that is similar* in character to the *whole*. For example, a line is an infinite series of points, since in any smaller *line* as a "proper part" of a larger line, there are *as many* points as there are in the larger line as the whole.

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[3] See Chap. XLIII., VII.-X. Cf. Royce, *Principles of Logic;* Russell, *Principles of Mathematics,* and *Scientific Method in Philosophy;* Whitehead, *Introduction to Mathematics;* also the works and articles referred to in Chaps. III. and XLIII., VII.-X. Either these several kinds of wholes are recognized by these writers, or the basis for their recognition and distinction is given.

[4] Cf. Russell, *Principles,* p. 69, and Whitehead, *op. cit.,* Chaps. I. and VI.

A series is *finite, if* it is *not* infinite; or, it is finite in respect to that by which it is *not* infinite. Thus, while a line is infinite in respect to points, it is finite in respect to any smaller line that is taken as a unit of measurement.

A series is *discontinuous* if, as is the case with the series of positive and negative integers and zero . . . –3, –2, –1, 0, 1, 2, 3, . . ., between *any two* of its terms there is *not* another term.

A series is *dense* or *compact* if, like the series of rational numbers, namely, the integers *and* rational fractions, positive and negative and zero, there *is, between any two* of its terms, another term.

A series is *continuous* if, in addition to terms that are in one-one correspondence with the rational numbers, there are still other terms that are in such correspondence with the *irrational* numbers, with both rationals and irrationals in the *order of their magnitude,* as this is determined by the asymmetrical transitive relation, "less than," or by its converse, "greater than."

In every series, each member of the series has one and only one specific "place" or "position." Every series, also, by virtue of being generated by an asymmetrical and transitive relation, has a *direction,* which, however, is not spatial, but *logical.* There are other characteristics of series, the mention of which, however, may be omitted here.[5]

IV. *Specific complexes* that are neither collections, classes, nor series. These wholes are generated by many different types of relations, either dyadic or polyadic, transitive or non-transitive, symmetrical or non-symmetrical, between terms that are either simple or complex. A good example of such a whole is the complex that is formed by *the one-one relation between a point and an instant, in the case of the motion of the center of mass of a particle.* Another good example is that complex which is generated by the one-many relation of one point to many instants, and which is identical with *rest*. Such specific complexes may in turn be members of a series; *e.g.*, motion is the series of complexes, each of which is a point-correlated-with-an-instant.

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[5] See Chap. XLIII., VII.-X.

V. An important specific type of such complexes is the *functional whole*. The simplest type of this whole is the "one-valued" function. Such a whole is generated by a *one-one* relation that correlates the terms of one series with those of another, but this relationship of one series to another is not of necessity itself serial in character, although it may be serial in some cases. As examples of such wholes we have the well-known facts, that acceleration is a function of time, and that the pressure of a gas is a function of the temperature.

VI. Another specific type of complex, and one, also, that has been of great influence in the *development* of both science and philosophy, is the *causal or organic whole*. It would seem that the causal relation is asymmetrical and transitive. It is asymmetrical in that it is precluded that R, as the causal relation of a to b, or of a on b, should be identical with the inverse relation, $\breve{R}$, of b to, or on, a. The relation, however, is transitive in that, if a causally affects b, and if b causally affects c, a is a cause of c. Also, if a affects b, then b is modified and becomes $b + e^a$, ($e^a =$ effect of a), while, if $b + e^a$ in turn affects c, c becomes $c + e\ (b + e^a)$.

If, however, both that which is acting and that which is acted upon continues to exist, together with the effects, and if the causal relation be universal, then the *effect affects* both the cause and also that *of which the effect* is the *effect*, and effects affect effects, and so on. Accordingly, each entity in an organic whole thus becomes *infinitely complex*, and reflects the whole, which is also infinitely complex.

There may, however, be two distinct types of causal or organic wholes. If the relatedness of terms does not of necessity carry with it the presence of the causal relation, then, in a whole, some terms might be related causally, and others not, which would mean that causation is *limited* in its field, even as other relations are limited. This type of limited organic whole seems, indeed, to be discoverable by empirical investigation in the case, *e.g.*, of any living organism, or any chemical compound. For in such wholes there are, in addition to causal relations, *functional* relations and a whole group of *non-causal* relations that are present in a functional whole. However, by some philosophers and scientists it is held that the causal relation is *universal, i.e.,* that two or more terms cannot be related *in any other way,* without *also* being causally related. There accordingly *results* the infinite complexity of both whole and part. This position is found by the supporters of the new logic to be invalid. Nevertheless it has grown up in the Aristotelian tradition, and has been of profound influence.

One of the important features of the new logic is the position, that relations are quite as objective as are terms. Among the relations that fall under one or more of the several types above presented are (a) *implication,* (b) *consistency* (if consistency be a relation), (c) *contradiction.*[6] Accordingly *three further types of wholes* may be added to our list, since *each* of these specific relations can relate parts so as to form a whole. An example of each of these types will make sufficiently clear, without further discussion, their distinctness. All three may be illustrated from the field of geometry.

VII. *Contradictory wholes.* Some relation, such as that of "and" subsists between Euclidean space and Lobatchewskian. Since a proposition is a relation between terms, space may be defined as that system of propositions which are identical with specific relations between certain entities, whether these be points, lines, planes, or spheres. But Euclidean and Lobatchewskian space are *contradictory* in the precise sense, that the latter *denies* the fifth postulate, the so-called "parallel postulate," of the former. The *proposition* or postulate which is identical with this denial, together with the other postulates, implies that kind of space which is known as Lobatchewskian. However, both this space and the Euclidean are equally real, although they are contradictories. Together, therefore, they form a whole, which is a *contradictory whole.*[7]

VIII. *Consistent wholes.* Consistent wholes are such as are *not necessarily implicative* in character. Thus, *e.g.,* the efforts of modern geometers have been in part directed to the problem of reducing the axioms and postulates of geometry to *the*

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[6] See Chap. XLI., III.-V.

[7] See Chaps. I. and XLI., V.

smallest possible number. One method for doing this has been to discover a set of entities for which a specific postulate does *not* hold, while other postulates do. Then this postulate or proposition is *not implied* by these others. In this way *a group* of postulates that are *consistent with but not implicative* of one another, has been discovered. The postulates are, however, related. Such a group forms *a consistent whole.*

IX. *Implicative wholes.* Perhaps few wholes are entirely implicative. Even the situation, $A < B < C$, implies $A < C$, is not wholly implicative, since, if A, B, and C are classes, other relations than *implication* are present, namely, the relations of similarity, difference, "member of," and inclusion. But a specific space such as is described by both Euclidean and Lobatschewskian geometry, illustrates that distinct kind of whole which is in part implicative and in part merely consistent.

III. TYPES OF UNITY

What the several types of unity are, is an important question for philosophy,—indeed many systems as, *e.g.*, monistic systems, not only are chiefly concerned with just this question, but also are, in part, identical with a specific solution to it. However, it is evident that, if the conclusion is reached that, *e.g.*, the whole universe, the human self, the living organism, or the system of knowledge is in each case a *unity,* this conclusion must be supplemented by determining in each case *just what kind of unity* each such entity is. And that there are different kinds of unities is shown by the fact that there are different types of organizing relations, and, therefore, different kinds of *wholes,* each of which not only is *itself a unity* in some sense, but perhaps, also, as a *complex* presupposes *unities* of a specific kind, as, *e.g.*, absolute simples.

The classification of wholes just given helps, therefore, to answer this problem, since it shows that there are at least the following different kinds of unity: (1) Absolute units, or simples, that are not composed of any parts; examples, points, and instants; (2) unities which, with one possible exception, are identical with *the different kinds of wholes.* (3) The possible exception is that kind of unity which is deduced in the argument for the underlying-reality theory of relations, and which may be called a *metaphysical* or *transcendent* unity. However, as alone consistent with the argument by which it is derived, this unity should be absolutely *simple*, since, if it is *not*, it consists of parts, and thus repeats the very problem, as regards the relation of these parts, which it is supposed to solve. But, in our previous criticism it has been found that such a unity is really *never* reached, since, as mediating the relation between the terms which lie above it, it is *related* to those terms, and therefore presupposes *still another* mediating unity, and so on in an infinite series. On the other hand, if the relation between such an underlying unity *and* the terms and relation "above" it demands, not the underlying-reality theory of relations, but the modification theory, then the underlying unity is *not simple, but complex*. Indeed, it is evident, that, if strictly empirical results be departed from, and the *universal* validity of the modification theory of relations be insisted upon, *all* unities would seem to become *organic, causal complexes*. Yet we have seen that this specific theory is also self-contradictory in that it presupposes, as the "elements" of such infinitely complex organic wholes, *ultimate simples*, which *simples* are related and yet independent.

We conclude, therefore, that there are to be accepted only as many *specific* kinds of *unities* as are shown by consistent empirical investigation to be *specific kinds of organized wholes*, or, as in the case of "numerical simples" such as points and instants, are presupposed by such wholes. Only provided the *modification theory of relations*, or the underlying-reality theory is postulated, can the conclusion be derived that all such wholes are, respectively, either *organic*, or those that are mandatory of an ultimate, absolute *One*.

IV. THEORIES OF RELATIONS AND TYPES OF LOGIC

Just as all wholes and all unities are, by the modification theory of relations, *organic*, and by the underlying-reality theory, a *manifold* of entities that are held together by *one underlying entity*, so, according as one or the other of these two theories is assumed to be universally valid, *different types of theories* as to the nature of logical principles and entities are derivable.

The traditional logic is, as we have seen, derived from the thing-quality view of "things." Everything which can occur as the logical subject of a proposition and of which a predicate is asserted, is, *by this logic,* made a *thing,* or a *substance* with *qualities.* The substance is that in which the qualities inhere; it is that which holds them together. But this position as to the nature of propositions is, as *stated in terms of the theories of relations,* the underlying-reality theory. *This theory, therefore, is itself a fundamental postulate of the traditional logic.* Accordingly, with this logic *dominant* up to the present time, it is not surprising to find that some of the most influential philosophies are the *monistic* systems, in which all else is made the manifold of attributes of *One fundamental Being or Substance,* whether this be material or spiritual.[8]

A *derivative* of this traditional logic is the *constitutive, a priori* logic of Kant. This logic presupposes both the underlying-reality *and* the modification theories of relations. Thus, if the principles of the ordinary logic be interpreted in accordance with the psychologizing tendency as *laws of mind,* and mind be regarded, in accordance with the underlying-reality theory, as a spiritual *substance* with attributes, then the *laws* of the mind are its attributes. And further, if the mind is related, in the act of knowing, to the object that is to be known, and this relation is interpreted by the modification theory, it follows that objects are *perforce* modified by the mind's attributes, and are known only as so modified. It results, that logical principles become *constitutive of the known world.*[9]

The pragmatic theory of logic to the effect that all logical principles and entities are merely *adaptative inventions of the human race,* is really derived also from the modification theory of relations as this is applied to human organisms *and* their environment. Both human beings and the environment *can* be *interpreted* either as substances with attributes, or as organic wholes; but in either case human organisms, as beings that *adapt* themselves to their environment, are beings in whom the environment causally *works changes,* and *conversely.* But *this* is an instance of the modification theory of relations. If, therefore, logical principles are only *adaptations,* then, as such, they presuppose the *modification theory of relations* as applying to the relation between human beings and their environment.

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[8] See Chaps. XXXIV.-XXXVIII.

[9] See Chap. XXIX.

In criticism it may be remarked that, if this be the case, then the *state of affairs* that *is* formulated by this particular theory could not itself be a mere adaptation or invention; for *its own objectivity and independence* are presupposed in order that other logical principles may be adaptations. Yet, if one logical principle is not an adaptation, it may be that none are, and that, in fact, *all* logical principles are quite *objective.*

Modern logic in contrast with these two interpretations and tendencies, presupposes, therefore, the theory of external relations. This logic finds that *things and their qualities* do not present the only instances of relations, but that relations of a *specifically different kind* are involved, *e.g.,* in series, in infinity, in continuity, in functions, and the like.

V. MATERIAL PRINCIPLES OF PROOF

The three theories of relations that have been discussed are *material principles* of proof. That is, if one assumes these theories, and deduces from them correctly, discovering their implications, one gets certain definite results. Two of the theories, namely, the "external theory" and the "modification theory," are shown empirically to be valid, *each* for a certain sphere of terms and relations, but no convincing empirical evidence for the underlying-reality theory has been found up to the present.

PART II

THE SOLUTION OF PROBLEMS
THE TRADITIONAL SYSTEMS OF PHILOSOPHY
THE CRITICISM OF THESE SYSTEMS

SECTION I

INTRODUCTORY

CHAPTER XXVIII

THE PROBLEM ABOUT PROBLEMS

PROBLEMS of the point of view, of methods, of theories of relations and the like, having been examined in the preceding sections, we are now prepared to inquire how specific solutions of specific problems are obtained *logically by postulating certain specific principles or propositions, and by making deductions from these principles.* Such a method of examining philosophical systems, in a manner that is independent of their historical development, has already been expounded somewhat in our discussion of the problem of the point of view,[1] and it now remains for us to carry such a method of procedure to completion.

I. THE EPISTEMOLOGICAL PROBLEM

It is a well-known fact that philosophy has developed in cycles, beginning with the ontological problem among the earliest Greeks, then going through the cosmological, the teleological, the theological, the ethical, and æsthetic problems, and finally reaching the epistemological problem in Plato and Aristotle, only again, on the basis of their epistemology, to return to the problems of ontology, cosmology, teleology, and the like. This recurrent series or development, in which the other problems received solution from the standpoint of the Platonic and Aristotelian epistemology, persisted up to the time of that somewhat vague period called the Renaissance, although it did not even then lose its influence.

The Renaissance was an awakening to new points of view and of method in literature, art, science, religion, and philosophy.

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[1] See Chap. I.-III.

One result was the birth, or rebirth of those empirical methods which have largely created our modern material civilization. But, while the Renaissance was characterized by the adoption of new methods of knowing, it did not apply these to the study of *knowing,* as itself constituting a problem. This problem first received clear recognition in the investigations of Descartes (1596-1650) and, more especially, of Locke (1632-1704), with the result that, throughout the modern period which follows these philosophers, other philosophical doctrines have, for the most part, been based on epistemologies. Indeed, that characteristic which marks this whole period in philosophy, even to the present, is *the domination of the epistemological problem,* although it may be, that in the near future, this domination will cease, because it will be proved, that human beings can know without *first* ascertaining *how* knowledge is possible, and *what* is its *extent* and *origin.*

Science all through this modern period developed with rapid strides, and to a large extent independently of the philosophy of knowledge, both as regards the facts disclosed and the method of their discovery. This development was characterized by the use of new means of knowing which for a long time were not understood in all respects, but which today have become better known, with the result that there is an increased efficiency in scientific method. The new logic, with its emphasis of relations, and the like, is itself a product of the modern study of such methods, and it is to this new logic that we must turn for the solution of many problems in both science and philosophy.

With such an extensive scientific development characterizing the modern period, and yet with so little attention given to the epistemological problem by the scientists themselves, the question arises, *why* this problem has exercised such a controlling influence over philosophy. The answer to this inquiry is, that such an influence has been due not only to the interest in the knowledge-problem itself, but also to the fact that certain specific solutions of the problem would seem to present a way by which men should be able to prove *real* that which they would *prefer* to be real, and also able to prove *false* or *illusory* that which they would have of this character. For it is a fact, that, for one reason or another, most men prefer that, *e.g.,* evil were not evil, pain, not pain, hate, not hate, and death, not death, even as they prefer that such "things" as goodness and beauty and life and love should not be illusory, but quite real. All else may be lost, if these but be saved; all else be illusion and appearance, if these but remain the realities.

But *how,* indeed, does *epistemology* offer opportunity for saving that which men would have saved, and for demonstrating as illusory or as merely apparent that which men perhaps detest and abhor? Why, indeed, should appeal be made in any way to philosophy? Cannot the momentous questions that concern the saving of what men would, in most cases, prefer to have saved, be settled on their own merits, or, at least, by *an appeal to science.* For does not science reveal to us suns and stars, the depths of space, and the eons of time; does she not penetrate beneath the surface of "things" to disclose otherwise hidden forces and energies; does she not picture both the macrocosmically great and the microcosmically small? Then why, also, should not God and soul and immortality, justice and goodness and beauty, come within her realm to lose their secrets too? The answer is, that science, in that it deals with such things as suns and stars, energies and forces, molecules and atoms, *has to do with that which is known, but that, as unknown, "things" may be so different from what they are as known, as to be the realities, with the known "things" mere appearances or illusions, so that it may be among "things" as unknown that the science of what is hoped for is to be sought and found.*

Who can deny that this may not be so? For does not fire make the iron red? Then may not the awareness be to both the fire and the iron, even as the fire is to the glowing and the redness. Epistemology, or rather, certain epistemological theories accept this analogy as a *principle.* For they find, not only that all "things" known are related to the knowing, or to the knower, and that to know what anything would be, or be like, *as unknown,* is impossible, since this would be again to make the unknown known, but also that *knowing makes a difference to "things,"* even as the fire does to the iron, so that we can never know without making such a difference.

How great shall this difference be? Could it be such a radical difference as to include such characteristics as extension and duration, hardness and color, manifoldness and unity? That this is not impossible, is the position that is sometimes insisted upon by those who emphasize epistemology.

The situation, that knowing cannot be eliminated from the world that we know, is called the "ego-centric predicament"; while the position that knowing makes the world what it is in at least certain respects, is an instance of the application of the *modification theory of relations.* The outcome of these two premises or postulates is most interesting, and appeals to our *hopes* and *desires.* For known "things" seem in some instances to be evil and unfriendly, hopeless and forlorn, ugly and forebidding, rigid and mechanical, and, in general, of little promise. But, *by the premises just mentioned,* may not all these undesirable "things" be due to the *difference that is made by knowing?* Then enter the realm of the good and the affectionate, the hopeful and the inspiring, the beautiful and the enlightened, the plastic and the free, not by knowledge, but by faith and intuition. These are what one desires, and thus it is that one can argue oneself into the possibility of their attainment.

II. THE VALUE-CENTRIC PREDICAMENT[2]

If the ego-centric predicament is thus taken advantage of, in order to demonstrate the attainability, or, at least, the reality of that which one would prefer *real,* the suggestion lies near that an analogous predicament may exist through the fact that *our knowing is always related to our desires,* our preferences, our yearnings, and, accordingly, perhaps, that our desires and preferences cannot be *eliminated* from our knowing. Such a situation may be somewhat awkwardly called the value-centric predicament.[3]

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[2] See, *e.g.,* James' discussion of tough-mindedness and tender-mindedness in Chap. I. of *Pragmatism.* However, why the pragmatist, who is admittedly a tough-minded individual, should seek to convert the tender-minded philosopher, whose point of view and system satisfy his own vital needs, is a puzzle from the standpoint of Pragmatism.

[3] N. Kemp Smith, "How Far is Agreement Possible in Philosophy?" *Jour. of Phil., Psych., and Scientific Methods,* Vol. IX., p. 701 ff.; see also the report of the twelfth annual meeting of the American Philosophical Association, J. B. Pratt, *Jour. of Phil., Psych., and Scientific Methods,* Vol. X., p. 91 ff.; cf. also Marvin, *First Book of Metaphysics,* Chap. I.; Sir Henry Jones, *Idealism as a Practical Need,* 1909; and J. G. Hibben, *Philosophy of the Enlightenment,* 1910.

This predicament—if it is such—has two forms of which the one concerns us chiefly as *individuals,* the other, our membership in a *social group,* whether this be narrow in its confines, or so wide as to include all human beings.

The effect of the predicament is, accordingly, that, if you as an individual desire an evil nullified, then do you accept as true only that philosophy which in some way does away with evil; but the effect is also, that, if you and I both have those hopes and longings which are inherited from our forefathers and from our race, then do we endeavor to *save* whatever is thus valued, by accepting only such a transformation of common sense and of science as will accomplish this result. Yet finally we may become *aware* of such an influence of our desires and preferences on our knowing, and therefore, in the attempt to eliminate this influence, we may reach that point where *we prefer truth at all costs*—no matter what *the truth* may prove to be. But the question then arises, whether we are not thereby *valuing* truth itself, and therefore *making truth a value,* thus to condition it, like other values, by our preferences and our desires.

In answer to such an inquiry, it may, however, be further asked, whether, *e.g.,* the fact that I prefer sincerity in all those with whom I have to deal in any way, prevents me from discovering that in some cases sincerity is wholly absent? But, if sincerity can be found to be absent, although I *prefer* its presence, then are not my *preference and that which I* prefer *independent,* although they are *related?* Similarly, does not the fact, that, although I *value truth,* I may nevertheless fail to find it, prove that my *valuing* and *truth* are *independent, though related?* And finally, if I *desire* to know, and yet *what* I desire to know is the truth for its own sake, no matter what the specific truth may be, then may not any specific knowing, with any specific content, be absent, even though I *prefer* to find such content present? But does not this possible *absence* prove that any specific knowing—of any specific content—although related to desire and preference, is *independent* of these? In other words, is there not at least a *virtual elimination* of desire and preference from any specific knowing—an elimination which means, that, when the desire to know is directed toward getting at the truth for its own sake, irrespective of what the specific truth may turn out to be, *the value-centric predicament is solved?*

Such a solution of this predicament is, as a matter of fact, presupposed all through science in its method of awaiting the outcome of hypotheses and theories, without *either believing or disbelieving* them, and the situation is not, *of necessity,* different in philosophy. Accordingly we conclude, that, although many philosophical systems have resulted, at least in part, from the endeavor to *save those worths and values which men would prefer to be saved,* nevertheless, the disinterested attitude is quite as possible in philosophy as it is elsewhere, and that the logical justification of this attitude is, that, although "truth for its own sake" is related to (this specific) preference, *the truth and the preference may, nevertheless, be quite independent.*

III. THE SOLUTION OF THE EGO-CENTRIC PREDICAMENT

The same principles which enable us to solve the value-centric predicament also make it possible to solve the ego-centric predicament. In fact these principles form a most important method for both science and philosophy.

In a great many instances of entities which we wish to analyze, it is impossible experimentally to remove the parts which analysis discovers. All the parts must be left *in situ,* and yet, if possible, we must discover not only the parts, but also the relations between the parts. This method must be pursued, *e.g.,* in history, since we cannot alter the past; in sociology, since we cannot to any great extent manipulate sociological and economic forces; in geometry, since we cannot experimentally remove the parts of space; and also, in a great many instances, in such sciences as physics, chemistry, and astronomy. Where we can, we experimentally remove a thing, *A,* that is in relation to *B,* from its presence and relation to *B,* in order to discover, whether, *thereby, B* is altered or removed; if it is, then we conclude that *A* influences, or causes *B,* or that *B* is functionally related to *A;* if it is not, then *A* is not such an influence, or cause, or variable.

However, in the fields of research just mentioned, it is impossible always to determine experimentally the question of influence, cause, or function. Therefore, if we analyze, we must leave the parts together,—*in situ*—to determine their dependence or independence.[4] Such a procedure is successfully practised in a great many cases, especially in science, in order to find specific *functional* relations. Thus, in the case of *a moving projectile,* there is the color, the shape, the chemical composition, the mass, the gradually retarded motion (negative acceleration), and the explosion that sets the projectile in motion. No projectile is without all these characteristics, with each one of them of some specific (numerical) value, as determined by some scale of measurement; and although any specific value can be substituted by another specific value of the same character, *e.g.,* the mass of 100 lbs. for the mass of 50 lbs., nevertheless no one of these generic characteristics can be experimentally removed from a moving projectile. Rather, each such characteristic must be left *in the presence of the others,* while their specific relations to one another are, if possible, determined.

Analysis shows, however, that, *e.g.*, although the retardation requires time, it does not *cause* time, nor time cause it, although the two are related. Rather the retardation is found to be a *function* of the time; related to time, and time to it, time is nevertheless independent of the retardation. The time is the independent variable, the retardation the dependent variable. Thus the time is *functionally* related to the retardation, but is not an effect of it. In such an instance, therefore, the specific retardation and the specific time must each be left *in situ,* and yet we discover not only that they are different and distinct, but also that, though related, they are independent.

But there are, of course, *causes* for the retardation, as well as for the motion as a whole *and* for the initial velocity. Different "things" can be distinguished, namely, the distance traveled, the time required, the initial velocity, the final stopping, the initial "angle of flight," the mass of the projectile, the force of the explosion, and, finally, the relationships of these entities to one another can be determined, and their dependence or independence be ascertained. Omitting unnecessary details, it may be said, that, by studying various instances of moving projectiles in which we are obliged to leave *in situ* the several parts, it is discovered, that the motion as a whole, with its several characteristics, either depends functionally upon, or is caused by, (a) the explosive force, (b) the angle of elevation of the gun, (c) the mass of the projectile, (d) the resistance of the air. Change any one of these, keeping the others constant, and the total motion, with its characteristics of change of velocity and distance covered, is changed. Color, however, makes no difference, nor does the chemical composition of the projectile, provided the same mass is retained. Here, then, analysis *in situ* reveals two sets of entities that are related to the motion. One set, namely, the explosion, the force of gravitation, and the mass, are constituent causes, variables or "elements" in the motion; the other set, namely, the color and the chemical composition of the projectile, are not such causes, elements, or variables.

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[4] Cf. Chaps. XXII. and XXVI.

This example illustrates a most important power of achievement of modern scientific analysis. "Things" can be analyzed, parts be discovered and distinguished, and yet left *in situ,* and relationships be ascertained. Three kinds of relationships appear, namely, (1) *functional,* in which an *independence* of related terms is discovered; *i.e.,* the terms are related in such a way that, if any term were eliminated, the elimination would make no difference to the other terms. There can be only an *ideal elimination* of such parts. Therefore the analysis must be made *in situ.* (2) *Causal* relationships are revealed. In these a *specific dependence* of specifically related terms is shown. In this case certain terms are what they are by virtue of their relation to other terms; *i.e.,* the relation between them is *constitutive.* (3) Both *non-functional* and *non-causal* relationships. In these it is shown, both by actual and by ideal elimination, that there is not only no causal dependence of certain terms, but also no functional connection. In the case of terms thus related, each term is independent, no term is constituted by others, any term can be eliminated without a resulting effect on others, and no term makes a difference to others. For example, mass and time are thus independent.

The ego-centric predicament can be solved, now, by this same method of analyzing *in situ,* and of thus discovering parts and relations, and the specific character of each. This predicament consists, as we have seen, in the impossibility of experimentally *eliminating* a knowing process as really occurring, or as implied as really occurring, from the *world that we know.* In other words, the world that we talk about, think about, mention, or know, is a *known* world. The predicament has most important consequences *provided* knowing makes a difference to the entity known, but it is of no importance, provided it can be shown, that knowing makes no difference to that world. If this last principle can be established, then it follows that the world *as unknown* can be quite the same as the world *as known,* and knowing must be concluded not to be *causally* related to that world.

If, now, it cannot be shown by an *experimental* elimination and analysis, that knowing is thus related independently to the entity known, nevertheless, an analysis *in situ,* and an ideal elimination of knowing suffice to furnish this demonstration.

Such an analysis and elimination is, in fact, made by every philosopher and scientist who, even in a philosophy that explicitly maintains the opposite, advances any position as a portrayal of the *real state of affairs* regarding knowing.[5] For example, if one is a follower of Kant, and accordingly maintains, that *all knowing* makes a difference to the object to be known, *i.e.,* alters it, modifies it, and the like, so that there is a specific and marked difference between the object *as known* and *as unknown,* then does not one present this position as the real *state of affairs* regarding knowing, with this *state of affairs* nevertheless *in relation to a specific knowing* as *its* content or object? But does not one *therewith* make an *exception* to the *rule* that is stated in the position? For does not one tacitly grant and presuppose, that here is *one instance,* at least, in which knowing is *related* to its object, and yet does *not alter, modify,* or *constitute* that object? And does not one tacitly presuppose, that, *if this specific knowing were not taking place,* this *state of affairs* regarding knowing would still persist as the real one?

To these questions there seems to be no other answer than "yes." In fact, every philosopher who *presents* any position in solution of the problem of knowing, tacitly presupposes that the facts which are therewith *known* are not *causally dependent* upon being *known,* either by himself or any one else. Every such philosopher thus really *solves the ego-centric predicament* for himself. Indeed, he solves it, even though in the particular solution which he advances, he may make use of this predicament in order to demonstrate its *insolubility,* and the consequences that result from this.

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[5] See the criticisms of systems opposed to Realism, Chaps. XXIX.-XXXVIII.; also Chaps. I., II., and III.

However, with the ego-centric predicament quite soluble in this way, it should no longer be regarded as serious, or as having important consequences. For if in one typical instance, knowing can be related to, and yet *not* cause, alter, or modify, *that which is known,* so that in this one case *knowing is ideally eliminated,* then the presumption is, that *in all cases of knowing the same state of affairs subsists.* To advance any other position means, that at a certain point an *exception* is met with that *contradicts* such a position. Indeed, that knowing makes a difference to its object, is a position that is *self-contradictory,* while, on the other hand, that knowing is *not* causally related to and makes no difference to the *object known,* is a position that can be advanced and maintained *quite consistently with itself as a true position.*

This position is self-consistent, because the proposition, that knowing does not make a difference to its object, itself *logically allows* one in this very instance to advance this as the real *state of affairs* concerning all knowing, including, therefore, *the specific knowing,* that *this is the state of affairs concerning all knowing.*

This self-consistent position is an instance of the validity of the *theory of external relations* which formulates the fact that terms can be both related and independent. One interesting and important implication of this position, which is presupposed by its own denial, is, that knowing or knower cannot be a *thing* or *substance.*[6] For, if it were, then it would *affect other things.* Therefore, in order to understand the real nature of knowing, we must not use the *traditional* logic of substance and attribute, but the *new logic* of relations.[7] We must use this logic, because it is empirically discovered to be that logic which is involved in any situation of genuine knowing. For knowing turns out to be, *not* a thing or *substance,* but an *event,* a *relation,* a *dimension,* or even a *disembodied quality,* with the object *known* entering into and getting out of relation to the knowing, while still maintaining its relations to other objects.[8]

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[6] Cf. Chaps. III., XIII., and XXVII.

[7] Chap. XXVII.

The critical study of the opposed position, that knowing is in some way *related causally and constitutively* to its object, shows that this is a conclusion which is derived (1) from the arbitrary, though unconscious, application of the *modification theory of relations* [9] to the specific relational complex, knowing *and* known object, and (2) from the somewhat surreptitious postulation of the *underlying-reality theory of relations* to *the knowing,* or to *the knower,* whereby the knower is regarded, tacitly at least, as *a psychical substance* (ego, self, spirit), and, therefore, as a sort of *thing with attributes* (the knowing states or processes). Either of these two postulates has carried with it the other postulate, and the reason why one or the other postulate has been made, is, that the *model* of the particular physical *thing,* with the two derivative concepts of substance and of cause, has for the most part dominated philosophical and even some scientific thinking from the time of Aristotle to the present.[10]

For in this tradition "things" are regarded not only as groups of qualities that inhere in a *substance,* but also as entities that *causally* act on, influence, and modify one another, with the effect dependent not only on the *thing* acting, but also on the *thing* acted upon. Thus the effect of melting produced by a red-hot cannon ball an inch from a candle is as much dependent on the candle as upon the cannon ball. Substitute an iron bar for the candle, and the effect is different. It is clear, then, that, if the principle thus illustrated is generalized and applied to certain problems or situations, *certain specific* conclusions by way of solutions to these problems are deducible. *But it is precisely this generalization and this application that have been made, at least tacitly, in the reasoning out of a number of the great philosophical systems of history, especially those that are based on a prior solution of the problem of knowledge.* The generalization and the application have taken place *pari passu.* The generalization has been made on the tacit or unconscious assumption (1) that the type or *model* for all,

[8] See Chaps. XLIII., III. and XI. [9] Chap. XXVI., II., 2. [10] Chap. III.

or for most entities, is that of *a thing and its qualities,* with the qualities inhering in the *substance* of the thing; and (2) that *the most important relation* between "things" is the *causal.* Thus, in philosophy such entities as matter, soul, God, personality, the universe, ideas, concepts, and percepts, and, in science, atom, force, energy, *have been* made *things* with attributes, while in logic the result has been, that reasoning has concerned itself (1) with substance-like *individual* things and their identity with themselves, (2) with kinds or *classes* of things, and the relationship of *inclusion,* complete, partial, or negative, of these kinds, (3) with the *causal* relationship between things, and (4) with the *kinds of causation.*

Aristotle, with *substance* as his leading category, illustrates one phase of this influence, as does Descartes with his *two substances,* mind and matter, and Spinoza, with his *one substance,* God, of which mind and matter are attributes. Modern Objective Idealism, or Psychism, with its doctrine of one spiritual substance, of which everything else is manifestation or attribute, exemplifies the same controlling influence,[11] as do also Locke, Berkeley, and Kant in their respective doctrines of *a mind,* a perceiving *spirit,* and a *transcendental ego.*[12] Science also shows the same influence in its older mechanistic theory, that all matter and all physical events consist of the motion of minute extended *things* or *particles.*

On the other hand, as illustrating the other main phase of the influence of this great dominating tendency and tradition, we have, *e.g.,* the Phenomenalism of Kant, and the Idealism of Berkeley, with their common position, that we can know only the (*causal*) *effects* of *"something"* that acts on our "minds." But also Naturalism (developing out of Hume's Positivism), Materialism, Pragmatism, and Romanticism are examples of positions that are developed from the postulate of universal *causal* interaction.

The two principles which have thus been used as postulates from which such specific philosophies have been deduced as derivative results are respectively, as logically formulated, the *underlying-reality theory of relations,* for the substance philosophies, and the *modification theory of relations,* for the causation philosophies. Both theories, however, can be present, in any one philosophy, as applying to different situations.

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[11] *E.g.,* Bradley, *Appearance and Reality,* pp. 141, 143.

[12] Chaps. XXIX. and XXX.

These two theories together form what we have previously called the two aspects of the theory of internal relations. Accordingly, with the problem of knowing the pivotal point for most modern philosophical systems, it is this theory of relations, with its two aspects, that has been applied to the several phases of the relational complex, *knowing* and *known object.*

From such an application, or postulation, specific philosophical systems have been derived. This postulation as made historically, has been, in most cases, unconscious and uncritical, since it has been due to the influence of the tradition of which the two aspects of the theory of internal relations form *the logical core.* However, at the present time, with the logical character of the tradition itself come to consciousness, and with the opposed theory of *external relations,* as instanced in science, also known, it is possible *to derive the several chief systems of philosophy in a purely logical manner by freely postulating one or another of the three theories of relations as applying to the complex, knowing and known object, in its several aspects, and by then deducing the logical consequences of these postulates as so applied.*

This method will be pursued in the sections that follow. Solutions of the other major problems of philosophy will then be derived logically from these same postulates, or from those solutions to the epistemological problems which are derived from such postulates, in a manner that in general corresponds to the historical dependence of the solution of these other problems on the prior solution of the problem of knowing.

SECTION II

CAUSATION PHILOSOPHIES

CHAPTER XXIX

PHENOMENALISM

PHENOMENALISM may be defined briefly as that philosophical position which maintains, that, by the very nature of the knowing situation, it is possible to know only *phenomena* or *appearances,* but *not* "things" as they really are; or, more briefly still, that "things" as they really are, are *unknowable,* and not *merely unknown.* This position is identified historically with the name of Immanuel Kant (1724-1804).

We shall present this position, not as it was consciously developed, temporally and historically, by Kant and other phenomenalists, but logically, according to those principles that were *unconsciously* and *uncritically assumed* by Kant, and that, *as postulates,* form a sufficient basis from which to deduce the *phenomenalistic philosophy.* Thus we shall examine this position much as a modern geometer examines the geometry of Euclid, namely, not in the sequence in which Euclid developed it, but *critically* in regard to the *postulates* upon which it depends, and the logical sequence of propositions that result from such postulates.

I. THE LOGICAL DERIVATION OF PHENOMENALISM

In order to make such a logical derivation of Phenomenalism, let us assume, as Kant really did under the influence of the Aristotelian tradition, (1) that the *knowing self is a psychical "thing" with attributes* (categories, percepts, concepts, and the like), *i.e., an absolutely unitary being* (*ego*) *in which there "inhere," or which holds together, certain specific mental attributes*[1] *called categories, concepts, percepts,* and the like. Let us symbolize such a self by *KS* (knowing self).

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[1] Although in his discussion of the Paralogisms (see, *e.g.*, Watson's *Selections from Kant*, pp. 145-155) Kant denies that the concept of *sub-*

Let us also assume (2) that, as numerically *distinct* from such a self, *there is a "thing" or entity, X,*[2] *that is to be known, if possible.*

In thus assuming both KS and X to be *thing-like* entities, it may be that the *modification theory of relations* is also already assumed for *the relational situation* $KS\ R\ X$ (object-to-be-known-related-to-the-self-that-knows-that-object), for, in accordance with the traditional logic, things *interact;* but, if this assumption is *not* therewith made, then (3) *let it be made explicitly.*

From these three assumptions the consequence can be deduced, that KS and X, as in relation to each other, *interact,* so that a twofold effect is produced. X acting on KS produces an effect called *sensation,* which we will express by KS^X,[3] while

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stance is applicable to the transcendental ego, nevertheless it can be shown that throughout his entire philosophy he regards *the knowing self, not* as a process, quality, or relation, but as *a substratum-like entity* in which both *a priori* concepts (categories) and empirical experiences (sensations and ideas) inhere.

[2] Kant's "thing-in-itself," all through his *Critique of Pure Reason.*

[3] See Müller's translation, *Transcendental Æsthetic,* ed. 1896, pp. 16-17. As here translated, Kant says:—

"Whatever the process and the means may be by which knowledge reaches its objects, there is one that reaches them directly, and forms the ultimate material of all thought, viz., intuition (Anschauung). This is possible only when the object is given, and the object can be given only (to human beings at least) through a certain *affection* of the mind (Gemüth)."

"This faculty (*receptivity*) of receiving representations (Vorstellungen), according to the manner in which we are *affected* by objects, is called sensibility (Sinnlichkeit)."

"Objects therefore are given to us through our sensibility. Sensibility alone supplies us with intuitions (Anschauungen). These intuitions become thought through the understanding (Verstand), and hence arise conceptions (Begriffe). All thought therefore must, directly or indirectly, go back to intuitions (Anschauungen), *i.e.,* to our sensibility, because in no other way can *objects be given* to us."

"The *effect produced by an object* upon the faculty of representation (Vorstellungsfähigkeit), *so far as we are affected by it, is called sensation* (Empfindung). An intuition (Anschauung) of an object, by means of sensation, is called empirical. The undefined object of such an empirical intuition is called phenomenon (Erscheinung)."

"In a phenomenon I call that which corresponds to the sensation its *matter;* but that which causes the manifold matter of the phenomenon to be perceived as arranged in a certain order, I call its *form.*"

"Now it is clear that it cannot be sensation again through which sensations are arranged and placed in certain forms. The matter only of all phenomena is given us *a posteriori;* but *their form must be ready for them in the mind* (Gemüth) *a priori,* and must therefore be capable of being considered as separate from all sensations." (Italics mine.)

KS acting on X produces an effect, X^{KS}, *the known object* "over against" the sensation as psychical "attribute."[4] In other words, with it necessary, in order to know, that KS should be related to X, it follows, on the assumption or postulate, that *relatedness* means *dependence*, and *dependence, modification*, that *both* KS^X and X^{KS} are of necessity *produced* in the act of knowing. Neither is produced without the other, and each is produced with the other. If there were no KS to be *in relation to* X, there would be only X, but no X^{KS}; so, likewise, with no X in relation to KS, there would be no KS^X. But, KS and X are, or, at least, knowing *and* object known *are*. For knowing, as Descartes showed, seems to be implied by its own attempted denial. *Doubt* knowing, and there still is *cogitans*. Also, *to know* without knowing *something* (an object), seems to be impossible. Indeed, to think of a knowing *without an object known* is *again* to reinstate an object. If, then, both KS and X *are*, and if, *being*, they are *related*, and also if, being related, they *interact*, then there *are*, also, KS^X and X^{KS}. KS^X and X^{KS} as *effects* imply KS and X as *causes*.[5] Not only is X^{KS} different from X, but, since KS^X is the effect of X acting on KS, it is also different from KS. KS is the original thing-self, while KS^X is the stream of sensations, and the like, which constitute the "empirical self" and which we get at by introspection and memory. X, on the other hand, is the original *thing-in-itself*, the "thing" as it really is, while X^{KS} is the *thing* of the material or physical world, known in sensation, *and* in all that knowledge which depends on and is derived from sensation.

With X and X^{KS}, and KS and KS^X, respectively, differing and, in some respects, distinct from each other, it is important to ask, How different are they in each case, *i.e.*, *how* does KS differ from KS^X, and X from X^{KS}? In order to determine this, it is evident that one must, *if possible*, get at or know X *by itself*, *i.e.*, *as* X *is unrelated to and unmodified by* KS, in order to *contrast* X with X^{KS}, and also get at or know KS, in order to contrast it with KS^X.

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[4] Cf. C. N. Broad, *Perception, Physics, and Reality*, 1914, Chap. V. on the Causal Theory of Perception, especially pp. 186-187 and 204-206.

[5] Pointed out, *e.g.*, by G. E. Schulze in his *Ænesidemus*, 1792.

Otherwise one must rest content with KS^X and X^{KS}, knowing only that they *are* different from KS and X, but not *how* different.

However, to succeed in such an *attempt* to know X by itself is *impossible* for the reason, that *success* would mean *again to relate* X to KS, and, therefore, to *make* it X^{KS}. Thus it results that it is only X^{KS} that we can know. In other words, the very attempt to know what "the world" would be like if it were *not* known, only again brings in the knowing, and so *defeats* itself, since, by assumption, knowing makes a difference to that which is known.

Here, it is evident, *the ego-centric predicament*[6] appears, but it is also evident that certain specific consequences result from this, because it is also assumed, that knowing makes a difference to the object known. Accordingly, with this assumption actually made, as it was, *e.g.*, by Kant, because of the influence of tradition, it follows, that, *unless* the knowing can be *eliminated* in some way, such as by the method of *analyzing in situ, then that difference which knowing makes cannot be eliminated from the known world*—which is the only world that we know. Such an outcome means, however, that our world is one that is *made*, at least in part, by *knowing*, and that it is in just this sense a world of *phenomena or appearances.*[7] Another world—of things-in-themselves—of *X's* is, of course, *implied*, as standing in contrast with these phenomena, but such a world can never be known—unless to discover that which is implied *is to know*. But, if this should be the case, then it must be granted *either* that such knowing modifies *its* object, thereby making that object mere appearance; *or* that the object that is known—*by being found to be implied*—is known *as it really is*. But, if this last be the case, then the proposition—basic for Phenomenalism—*that two related terms* (in this instance, knowing and object *known by implication*) *causally influence each other*, is contradicted, and Phenomenalism as a position becomes self-contradictory.

The position that is derived logically in this relatively simple manner is the essence of the phenomenalistic philosophy. The presuppositions or postulates from which the position is derived are (1) the modification theory of relations, namely, that *related terms as related* modify or influence one another; (2) that the known object and the knowing are (of course) an instance of related terms; and (3) the ego-centric "situation," to the effect, that *knowing* is always present to the (only) world that we know, and cannot be eliminated in any way—even by an *analysis in situ.*

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[6] The writer assumes that this predicament is now understood by the reader. See Chaps. X., XXVIII., XXXIX., XLI.

[7] Terms also used all through the *Critique*.

The further development of the position results from the making of *further postulates,* one of the important details of such a development being the conclusion or result, that, although things-in-themselves, *X's,* cannot be known (except by implication), nevertheless the "original" self, *KS,* can be known in its real and genuine character.[8]

To present the logical development of such an outcome, let us examine the postulates already made, and, if necessary, also make other postulates. Proceeding in this way we find, that the postulates already made mean not only that *KS* and *X* are distinct, but also that they are each *active*. Let us next set up the two further postulates, (4) *that that which is self-evident is true,* and (5) *that that whose opposite is inconceivable is true.* We then find *by both these tests* that it is true (6) that any *active thing*, or, that a thing, *if it acts, must act in accordance with its own nature.*

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[8] *Critique,* Müller's translation, ed. 1896, p. 41; here Kant says:

"We call sensibility the receptivity of our soul, or its power of receiving representations whenever it is in any wise affected, while the understanding, on the contrary, is with us the power of producing representations, or the spontaneity of knowledge. We are so constituted that our intuition must always be sensuous, and consist of the mode in which we are affected by objects. What enables us to think the objects of our sensuous intuition is the understanding. Neither of these qualities or faculties is preferable to the other. Without sensibility objects would not be given to us, without understanding they would not be thought by us. 'Thoughts without contents are empty, intuitions without concepts are blind.' Therefore it is equally necessary to make our concepts sensuous, *i.e.,* to add to them their object in intuition, as to make out intuitions intelligible, *i.e.,* to bring them under concepts. These two powers or faculties cannot exchange their functions. The understanding cannot see, the senses cannot think. By their union only can knowledge be produced. But this is no reason for confounding the share which belongs to each in the production of knowledge. On the contrary, they should always be carefully separated and distinguished."

Also, Kant says (Müller's trans., ed. 1896, pp. 45-46):

"On the supposition therefore that there may be concepts, having an *a priori* reference to objects, not as pure or sensuous intuitions, but as acts of pure thought, being concepts in fact, but neither of empirical nor æsthetic origin, we form by anticipation an idea of a *science of that knowledge which belongs to the pure understanding and reason, and by which we may think objects entirely a priori.* Such a science, which has to determine the origin, the extent, and the objective validity of such knowledge, might be called Transcendental Logic, having to deal with the laws of the understanding and reason in so far only as they refer to objects *a priori,* and not, as general logic, in so far as they refer promiscuously to the empirical as well as to the pure knowledge of reason." (Italics mine.)

From this last proposition, as conjoined with postulate (1), it follows that *KS*, the knowing self, must, whenever there is knowing, act in accordance with *its* own nature—whatever this nature may be. Accordingly, the problem becomes one of finding, if possible, *i.e.*, of knowing *what the nature of KS is.* But this problem is solved by finding and enumerating *all* those most *generic* ways *in* or *by* which we *must* think or know. For, on the one hand, if a "thing" must act in accordance with its own nature, and cannot act in contradiction to this nature, then, on the other hand, and conversely, those ways in which *KS must act or think or know* will constitute its nature, and to discover *what* those ways are will be to discover and to know what the nature of *KS* is. But what those ways *are* in accordance with which *KS must act*, is shown by finding what principles are such that they are either (7) self-evident, or (8) are presupposed by the very attempt *not* to use them, *or* (9) are of such a character that their opposite is inconceivable.[9] For, if there is revealed in this way a specific *compulsion* on *KS* to use certain principles when it acts or thinks, then by postulate (6) this compulsion is explainable by the hypothesis, that such principles make up the nature of *KS*, *so that to know these principles is to know KS.*

With this *the method* by which there are *ascertained those principles which are apodictic* or *necessary* for thinking and for knowing, and which *constitute the nature of the "transcendental self,"* *KS*, it is evident that the particular list of principles that one may find, is dependent upon the outcome of applying the criteria by which one determines what one *must* think. These criteria are, respectively, as we have seen, *self-evidence, the inconceivability of the opposite,* and *presupposition by denial.* But since the first two of these criteria are, as we have previously discovered, distinctly psychological tests, and the third, although logical in character, is open to error in its application, the results obtained by using these criteria vary from individual to individual, differing with differences in temperament, training, and intellectual environment and influences. Indeed, only a meager inquiry shows that what is self-evident to one person is not self-evident to another, and that that which cannot be conceived by one is readily conceivable by another. We should, therefore, expect to find a considerable variation in the lists of those principles which the several adherents of Phenomenalism present as *categories,* or laws of thinking, and such a variation is found.

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[9] Cf. Chap. XI., v.-vii.; see the *Critique*, Müller's translation, p. 24, for this principle. Here Kant says:—

"Space is a necessary representation *a priori*, forming the very foundation of all external intuitions. It is impossible to imagine that there should be no space, though one might very well imagine that there should be space without objects to fill it. Space is therefore regarded as a condition of the possibility of phenomena, not as a determination produced by them; it is a representation *a priori* which necessarily precedes all external phenomena."

For Kant, however, the list of such principles included *space, time, unity, plurality, totality, substance and attribute, cause and effect, actuality, possibility, necessity, quantity, quality, relation, modality.*

If, now, there *are* such "laws of thinking," as *the attributes* of a thing-like transcendental self, certain interesting consequences follow. First, it follows, that these principles are not derived from the *results* of the seeming action of ordinary things, X^{KS}*'s*, on our sense organs (which are also X^{KS}*'s*) ; *i.e.*, they are not derived from our sensations, KS^{X}, but, rather, they are in some manner *"in"* the self, *KS*, and so are *prior* to ordinary "things" and sensations. Ordinary "things" and sensations are constituted by the interaction of *KS* and *X*. But these laws are already in *KS prior* to this interaction. Accordingly there can be certain sciences such as those of number, of space, of time, of space related to time, *i.e.*, of motion, and these sciences (1) *are independent of sense experience, so that* (2) *they cannot be contradicted by sense experience, and* (3) *are necessarily true.*

Secondly, the interesting consequence follows, that these principles and all that is rigorously derivable from them are *constitutive* of the world that we live in and know through our sensations. For, if that world is the partial *effect* of the knowing self, *KS,* as it acts on unknowable *X's,* then the effects so produced are *dependent on that self's nature or attributes.* But some of the more important of these attributes were (for Kant) space, time, cause, and substance. Therefore the world which we know is spatial, temporal, causal, and substantial, *because it is made so by being known.* In contrast with this world, however, the unknowable world of *X's* does not *of necessity* possess these characteristics, although it may possess them.

It is evident, therefore, that Phenomenalism allows not only for two distinct kinds of objects, namely, for things-in-themselves, *X's,* and for physical objects, X^{KS}*'s,* but also for two distinct kinds of *selves,* both of which are, however, *known.* Thus, on the one hand, there is the original transcendental thing-self, *KS,* with *its* attributes, namely, *the principles of knowing.* The traditional definition of a thing, as a unitary substance in which attributes inhere, is, however, the model for this conception. This self is sometimes called by Kant the "transcendental unity of apperception," meaning by this that knowing in its several forms and in its manifoldness belongs to a *numerically single knower.* And, on the other hand, there is the empirical psychological self, KS^X, that consists of the stream of sensations, memories, concepts, emotions, and the like, and that is the *effect* of things-in-themselves, *X's,* acting on transcendental selves, *KS's.*

Kant in developing his Phenomenalism explicitly stated that the laws of the transcendental self, the *categories,* were applicable *only to phenomena,* meaning by this, that phenomena must bear their impress, *i.e.,* that phenomena must be causal, spatial, temporal, substance-like, etc., *because* of the effect which knowing produces on the thing (to be) known.

What, then, about the psychological phenomena of the *empirical* self that are given by introspection, memory, and the like? Do the categories apply to them also? *Or,* just as knowing *imposes* its laws on things-in-themselves to produce physical phenomena, do, conversely, things-in-themselves, *X's,* impose *their* nature on the transcendental selves in producing the KS^X*'s,* so that KS^X*'s* are different from X^{KS}*'s,* and have *different categories* applying to them? Yet again it may be asked, whether, as known—*by a knower*—the empirical self should not bear the impress of *all the knowing principles that reside in the transcendental knower,* and, therefore, be spatial, causal, temporal, substance-like, etc.?

Such questions indicate certain inconsistencies in the phenomenalistic philosophy—and Kant himself did not remove them. But the reason why he did not do so may well be, that they are inherent in the position and, indeed, irremovable, even as irremovable as *the inconsistency* of the *Critique of Pure Reason* itself, in, on the one hand, portraying and maintaining it to be the *real and quite knowable* state of affairs concerning the knowing situation *that,* on the other hand, *the reality of "things" is unknowable* and that our knowledge is limited to *appearances.*

II. PHENOMENALISM'S SOLUTION OF PROBLEMS

It is not our purpose, however, to present the *many inconsistencies* that infect the phenomenalistic position. Rather, we shall state or derive those *solutions of other problems* which the position involves as itself a solution of the problem of knowing.

Foremost among such consequences is the opportunity that is given for putting "all sorts of things" into the realms of *things-in-themselves,* the *X's,* and also of the transcendental selves, the *KS's.* Phenomena, both physical and psychological, *i.e.,* both X^{KS}*'s* and KS^X*'s,* are *causal* in character, *i.e.,* are determined. Therefore in *these* realms there is no *freedom* to do the right, to attain to ideals, and, *in reasoning, to follow implications* rather than mere associations. Psychologically and physically "man is a machine." But, in the realm of "things" that are *unaffected* by knowing, and that are, therefore, *perhaps not causal,* not temporal, not spatial,—indeed, *not determined* in any way, there may be freedom, with this including the freedom both of the will and of the reason.

This is the beginning of Phenomenalism's solution of the *value problem.* Man is a member of two "worlds"; in one, as a transcendental self, a *KS,* he may be free, responsible, righteous, and immortal, and in this "world" there are *values,* and these are attainable. In the other world, the phenomenal, in which man is psychological and biological, chemical and physical, he is but the *product* of circumstances, hereditary and environmental, as the *completely determining causes* of all that he is and does. But, further, the Deity may also be a member of the transcendental "world," thus having to do with, and perhaps even Himself being, *The principle of worths and values,* and, therefore, not in the least belonging to the realm of the "things" of common sense and science.

Yet what the Deity's nature is, we cannot know, since *by knowledge* we cannot enter this realm. Only by *faith* is there entrance, and by faith there may be revealed a theistic or even a pantheistic God, who works with a *purpose,* which, since KS and X underlie KS^X and X^{KS}, itself underlies or is *immanent* in the world of phenomena. In this way does Phenomenalism solve and connect the axiological (value-), the *cosmological,* the *teleological,* and the *theological* problems.[10]

In its *ethics,* therefore, Phenomenalism is opposed to all those ethical positions that consider *only* the realm of *phenomena,* and accordingly it is opposed to the ethics of *pleasure* in any form, be this egoistic or altruistic. Rather, its ethics is absolutistic and formalistic. Man is both a *transcendental* and an *empirical* self. Part of his transcendental self is his *conscience,* and this commands him *unconditionally* to act out of *regard for and in accordance with the right,* and not to condition his motives and deeds by seeking pleasure or well-being, either for himself or for others. What the morally right act *is* in specific circumstances, may be difficult to determine, but Phenomenalism holds, that in any case there is *an absolute right,* which is to be discovered if possible. As a psychological person, *i.e.,* as a member of the world of phenomena, man is subject to motives of pleasure and cannot escape them. But it is *inconceivable* that conscience should *approve* any act or motive that does not appear to be right irrespective of pleasurable or useful consequences. This is Phenomenalism's ethical *absolutism* and *formalism.*[11]

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[10] These aspects of the Kantian philosophy have been, perhaps, more responsible for the dominating influence of Kant than have the more strictly epistemological features of his philosophy.

[11] Kant's ethical position has received more discussion than perhaps any other phase of his philosophy.

In its solution of the *ontological problem,* Phenomenalism is clearly *pluralistic,* both "quantitatively" and qualitatively, and in respect, also, to both its initial postulates, and the results that are derived from these. Thus there is *initially postulated* a *qualitative* dualism of two manifolds, the one of *many* transcendental selves, the other of *many* "opposed" things-in-themselves; secondly, there *results,* as qualitatively different from these two realms, the realm of *phenomena,* X^{KS}*'s* and KS^{X}*'s,* and these two are in turn each a *manifold,* as well as *qualitatively different* from each other. In a number of respects, therefore, Phenomenalism is *pluralistic,* both qualitatively and numerically, in its solution of the *ontological* problem.

The *ontology* of the position is, however, not one that is wholly *derived,* but one that is in part *assumed,* even as is part of its *cosmology.* Such ontological and cosmological assumptions are made, as we have seen, in order to solve the *epistemological* problem. Thus, *e.g.,* there is assumed an ontological pluralism of psychical selves and of opposed things-in-themselves in interaction. But besides such *assumptions,* certain other postulates are also made. For Phenomenalism *assumes,* and does *not prove, consciousness* to be, or to imply, a *thing-like self with qualities or attributes.* This basic assumption really conditions the whole phenomenalistic position. It is tacitly assumed, further, that *all transcendental selves are alike.* This assumption makes it possible also to derive the conclusion, that there is but *one system of truths,* and, in this sense, but one Truth which all transcendental selves are capable of getting at, especially in the case of those sciences, such as mathematics, geometry, that are derived only by thinking. Emotions and the like may differ from man to man, but *pure reason* is the same in all, and, for this, there is only one Truth. Phenomenalism is, therefore, *absolutistic and anti-individualistic in its philosophy of Truth.* There is but *one standard,* not many. Phenomenalism maintains this conclusion not only for the *a priori* sciences of mathematics and geometry, but also for all the empirical sciences, such as physics. But, since the "things" with which the empirical sciences deal are *made* in part by knowing, and since the transcendental selves are all alike, therefore, in order to have one Truth in these sciences, *things-in-themselves also must all* *be alike.* Accordingly, you and I can know "one thing" in the same way, and so have a basis for agreement in our empirical sciences.

As regards *the problem of the origin of knowledge,* Phenomenalism clearly holds, both by initial assumption and by derivation, that some knowledge does not come from sensation, but from the *self-activity* of the transcendental ego. In this respect, therefore, the position is *rationalistic.* Other knowledge, however, comes from sensation, so that Phenomenalism is also *sensationalistic.*

Given its premises, Phenomenalism is bound to take the position, that knowing *helps to make* facts, or "things." But *knowing,* strictly interpreted, connotes the presence of truth. Therefore, with the knowing self *interacting* with things-in-themselves, something is *produced* that is *both fact and truth.* Indeed, every fact is a truth, and, conversely, every truth should be a fact, *i.e.,* a phenomenal fact, either a KS^X or an X^{KS}.

But it is at this point that Phenomenalism *contradicts itself.* For, while this doctrine is its *explicit* teaching, Phenomenalism offers itself as so much genuine (true) knowledge about the knowing situation, thus *tacitly to presuppose that knowing does not make this situation, but discovers it.*

Here, therefore, are facts that are not made, "colored," or "constituted," *even in part, by being known,* but that are presupposed to be known *as if* the knowing were *not* taking place, with *truth subsisting as just this specific relation between the facts known and the knowing.* Those *presuppositions* on which the phenomenalistic position itself rests, as a whole, are contradicted, therefore, by its own explicitly stated conclusion, that facts and truth are made by knowing. Consistently with this conclusion, the so-called facts *about knowing* cannot be facts, since they are *not made* by knowing. Yet, on the other hand, with Phenomenalism advanced as *the true position* concerning knowing, they are presupposed to be facts.

Phenomenalism is in this respect clearly self-contradictory. It involves *two definitions of fact,* and *two of truth.* By *the implicit* presuppositions and definitions on which the position as a whole rests, *facts*—the facts about knowing—*can be known* as they really are. These facts are presupposed to be related to the knowing, but *not to be constituted* by it. Therefore, although the knowing cannot be eliminated *existentially,* it *is eliminated ideally,* and is presupposed to be *related externally* to that *state of affairs* which holds of knowing *and* its object.

As the only condition on which Phenomenalism can be a *true* theory, there is presupposed, therefore, a perfect *solution* of the *ego-centric predicament.* Also, the definition of truth which the position *presupposes* is, that truth is that relation which holds between knowing and fact, when the latter is known as it really is, *i.e.,* as *unmodified* by, and, in this sense, as *quite independent* of knowing. When this specific state of affairs does not exist, and yet knowing is taking place, there is, accordingly, *error.* Such is the definition of *error* that, seemingly, Phenomenalism presupposes.

This definition of *error* is, however, contradicted by the definitions, or by the implications of the definitions that are *explicitly* advanced by Phenomenalism. For, by those definitions, fact and truth *are made* in the knowing process, and where there is one, there, also, is the other. Indeed, where there is knowing, and, therefore, the relation of the knowing self, KS, to the thing-in-itself, X, there, also, are *both* facts and truth in the resulting phenomenal realms, KS^X and X^{KS}, *but there cannot be error.* Phenomenalism, therefore, in its explicit position, that knowing *makes* fact, can find *no place* for error, and thereby contradicts the presupposition on which at least *the theory as a whole* is based, namely, the presupposition that there *are both truth and error.*

In summary, then, it may be said, that Phenomenalism, in its *explicit* development, maintains that truth is *not* constituted by a "copy" relationship between knowing and fact known, but that in its foundations, it *presupposes* just this definition of truth; in other words, in its *explicit* development Phenomenalism is *pragmatic, i.e.,* it maintains that whatever is known is, *a fortiori,* fact *and* truth, while in its *foundations* it is *absolutistic, i.e.,* it presupposes that there are facts to be known, if possible, as they really are. Such knowledge is true knowledge, *and one instance of such knowledge is supposed to be the phenomenalistic theory about knowledge.*

The statement of the other *epistemological* positions that are involved in Phenomenalism can be made briefly. First, it is quite evident that the position *accepts the validity of intellectual analysis* as a means of getting at fact and truth. Phenomenalism is, therefore, *intellectualistic.* An opportunity for *non-intellectualism* is found, however, in the necessity of satisfying the demand, that there should be *some* method of approach to the non-phenomenal realm. The immediate revelation, by introspection, of the dictates of conscience and, perhaps, of the axiomatic principles of logic and of mathematics, and the like, is held to characterize such an approach to the transcendental self, while faith and æsthetic appreciation are advanced as non-intellectual methods of approach to things-in-themselves.

With reference to the problem of the *nature of consciousness,* Phenomenalism takes the position, in its basic *assumptions,* that consciousness in every form is of the nature of a psychical, *thing-like* and *substance-like ego with attributes,* rather than a process or a relation. Even the empirical psychological consciousness, as the combined and total effect of the action of things-in-themselves on the transcendental self, is of the character only of a *complex* of derived *attributes* that *inhere* in an ultimate *thing-like* self or soul.

This completes the presentation of the main points that are involved in the logical and the metaphysical "structure" of Phenomenalism. The position is clearly a product of the Aristotelian formal logic as this is applied, as a *method,* to the development of a specific philosophy that is involved in the concepts of *substance* and *cause.* The *more* important details of the position result from tacitly assuming, historically, because of the influence of the Aristotelian tradition,—(1) that both the knowing self and the object known are *thing-like* entities, each with a structure of attributes inhering in a *substratum,* and (2) that, by virtue of being related, each of these entities causally affects the other. The position is, therefore, very distinctly a causation-substance philosophy.

We have given this relatively long account of Phenomenalism, because of its pivotal position among a number of philosophies that rest on essentially the same foundation, but that differ in certain details. Those other philosophies, for which Phenomenalism is logically the center, are Subjective Idealism, Positivism, Naturalism, Pragmatism, and, perhaps somewhat paradoxically, Materialism. Some of these, notably the first two, historically preceded and culminated in Phenomenalism. Accordingly their *logical structure* becomes clearer in the light of that position, Phenomenalism, which, historically, was their culmination.

III. CRITICISM OF PHENOMENALISM [12]

However, before we examine these other positions, to state their postulates and derive other propositions from these, we must present our fundamental criticism of Phenomenalism, since it is upon the basis of this criticism, as holding not *only* of Phenomenalism, but also of other systems, that our gradual, inductive, and yet rationalistic development of Rationalism and Realism depends. Also, since our criticism has this specific outcome, as identical with our final empirical generalization, *the frequent restatement* of the same criticism under varying circumstances (*i.e.*, the repeated criticism of the several philosophies that are opposed to Realism and Rationalism) will be pardonable, if such criticism is regarded as the citing of such *typical instances* as are necessary for the establishment of any inductive generalization.[13]

As is well known, much, and perhaps most modern philosophy centers around the epistemological problem. This is especially true of the positions just named. For especially since Kant, but also since Descartes, Locke, Berkeley, and Hume, most philosophers have deemed it necessary to solve *the problem of knowledge,* in order subsequently to define the *status* of that which is known. In other words, philosophers have set out to discover the facts, or the *states of affairs* concerning knowing *and* the relation of knowing to the object known, *as a prerequisite* for solving the other problems of philosophy, and, as a result, they have issued with those definite solutions which have received such names as Phenomenalism, Subjective Idealism, Positivism, Pragmatism, and even Materialism. But this means that, whatever has been presupposed as to methods, and the like, it has at least been presupposed (by the philosophers) that there *are some facts, or state of affairs,* (1) that *are known as they really are,* (2) *that can be known by others,* and (3) that, though related to knowing, are not caused, altered, modified, affected, or constituted by virtue of that relation. These facts or states of affairs, in the instance of the epistemological problem, concern the knowing situation.

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[12] See the writer's "Logical Structure of Self-refuting Systems," *Phil. Review*, Vol. XIX., 1910, pp. 276-301.

[13] See Chap. XV., III.

As regards this situation, however, if one endeavors to think or conceive these facts as they would be, *were they not known,* one does not succeed, since thereby is the knowing *reinstated.* Clearly, one cannot know entities, either simple or complex, *except as they are known.* So much of truth is there in the ego-centric predicament. But this predicament is itself forthwith solved in the very *presuppositions* that are made in *any* solution of the problem of knowledge, namely, in the presuppositions, (1) that, although the facts about knowing are known facts, the specific knowing (*e.g.,* of the philosopher who knows them) does not causally affect these facts; (2) that this knowing is externally related to these facts, so that (3) the knowing is ideally eliminated from the (known) facts by an *analysis in situ.*

These presuppositions are, however, the main principles of that position which is called Realism. Other philosophies, therefore, ultimately rest on this realistic basis,[14] and differ from Realism in not carrying through consistently the very principles which they presuppose and on which they are based. Realism, discovering that these principles *are presupposed* in any system that even pretends to portray the *facts* concerning knowing, extends these same principles to all cases of knowing. It does this on the ground of the principle of consistency, which demands that, if these principles *hold* for *the knowing of the facts concerning knowing,* they must be *presumed* also to hold for the knowing of *all* other facts, until good reasons to the contrary can be advanced. Realism in taking this position is *self-consistent* in its epistemology, while any other philosophy which, like Phenomenalism, takes one position with reference to the knowing of "other facts," and another position as regards the knowing *of the facts concerning knowing, is self-contradictory.*

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[14] Cf. Chaps. I., II., and III., and also the later chapters, XXXIX. to XLV., on Realism.

For this reason Realism has a marked advantage over other positions: it is self-consistent, whereas they are self-contradictory in that while they are all realistic at a certain point, they depart from this realism by making arbitrary and sometimes hidden assumptions, thus to build up reinterpretations that completely *transform and transmute* the facts of both common sense and science. For example, that which to common sense and science is a physical object, is transformed into mere *appearance,* or into spiritual object or "manifestation," or into "human invention." Realism objects not so much to these conclusions as such as to the *methods* by which they are arrived at, for it finds these methods to be artificial, invalid, and self-contradictory. On the other hand, if the same principles, logic, and general methods that are presupposed by *any* philosophy in getting at the *facts about knowing,* were used in order to know *other facts,* and if these facts should thus be found to be *qualitatively different* from what common sense and science accept them to be, then would Realism be quite compatible with at least some of the conclusions of some of the positions that are opposed to it. For example, it could accept the position, that the whole universe is ultimately psychical in character. But Realism finds that, up to the present time, opposed systems have not thus been consistently derived, but that, in the method of arriving at their transforming conclusions, such systems depart from and contradict the very presuppositions on which, as philosophies, they depend.[15]

BIBLIOGRAPHY

[15] The Kantian bibliography is very extensive, and need not be given here. Thilly, *History of Philosophy,* pp. 395-396, gives the complete list of Kant's own works, and the more important volumes on the Kantian philosophy. The writer recommends Watson's *Selections* (from the three Critiques) for the beginner, and, for the more advanced student, Müller's translation. Kant's *Critique of Pure Reason* was first published in 1781, and a second, revised edition appeared in 1787. His ethical works are, *Grundlage zur Metaphysik der Sitten,* 1785, and *Kritik der praktischen Vernunft,* 1788; his chief æsthetic work, *Kritik der Urteilskraft,* 1790.

The most thorough-going contemporaneous Kantians are: H. Cohen, *Logik der reinen Erkenntniss,* 1902, and P. Natorp, *Die logischen Grundlagen der Exakten Wissenschaften,* 1910. Other philosophers who are more Kantian than anything else are: Sir William Hamilton, E. Zeller, K. Fischer, F. A. Lange, H. Vaihinger, B. Erdmann, E. Adickes, A. Ritschl, R. Lipsius, F. Paulsen, C. Renouvier.

CHAPTER XXX

SUBJECTIVE IDEALISM

I. LOGICAL DERIVATION

Subjective Idealism is derived by a proof very similar to that for Phenomenalism. The *central problem* is once more that of *knowing*, and the solution of this problem concerns chiefly *the nature of known objects. All objects prove ultimately to be psychical*—except, perhaps, time. To establish this conclusion was the purpose of George Berkeley, the founder of the system, in order thereby to do away with matter completely, thus to find room for the omnipotence of the Deity.

To deduce this position, not in its historical, but in its logical order, let us assume:—

1. That there are *conscious selves*[1] that are *spirits*, or *souls*, with, perhaps, their own laws and qualities; in other words, that there are *psychical "things,"* which are *substance-like substrata* with *attributes* called ideas.[2]

2. That a *spirit* is *one, simple, undivided, active* being.[3]

3. That *whatever* a spirit or soul *directly perceives and knows* is an *idea*.[4]

4. That there are *no abstract ideas*.[5]

5. That *whatever* is "given" to a spirit either *without or against its will* is *caused*.[6]

6. That there is *something that acts on* (these thing-like) spirits, and *produces* in them *effects* called (sensations and) ideas. Let us (with Berkeley) call this "something" *God*, defining this Being as an Infinite Spirit,[7] and denying all (important) action of finite spirits on this Infinite Spirit.

Comment: This Infinite Spirit takes the place, logically, of the *things-in-themselves* of Phenomenalism, only, unlike these, it is not *unknowable,* since it can produce in us a true idea of itself.

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[1] Cf. Berkeley, *Principles of Human Knowledge*, ed. Fraser, §§ 1, 2, 7, 27, 89.

[2] *Ibid.*, §§ 1, 86, 89.

[3] *Ibid.*, § 27.

[4] *Ibid.*, § 1.

[5] *Ibid.*, §§ 7-10, 25.

[6] *Ibid.*, §§ 26, 29, 30, 33.

[7] *Ibid.*, §§ 26-30, 51, 57, 60-63, 106, 147.

7. That *time is not a mere idea,* but is a "condition" for the occurrence of ideas, and for the existence of spirits both finite and infinite.[8]

8. That so-called physical or *material* things are (unlike spirits) *only* the *collection* or *union* of (their) qualities, and that there is *no underlying material substratum* or *substance* in which these qualities inhere.[9]

9. That *certain qualities,* such as *color,* which we perceive (in so-called physical objects) are the *effects, in* finite spirits, of something acting on these, and that accordingly these qualities are *like spirits in nature, i.e.,* are *psychical* or *conscious.*[10]

10. That *all* so-called physical qualities and attributes, even hardness, solidity, extension, figure, and motion, are, *like color,* perceived.[11]

11. That *only those "parts"* of the so-called physical world that *are* (concretely) *perceived are real.*[12]

12. That God is, and that His nature is (among other "things") that of being *an eternal perceiver.*[13]

13. That the *realm of physical things is law-abiding,* regular, and uniform.[14]

14. That *spirits* are *distinct* and *different from* ideas, even as attributes are distinct and different from substance.[15]

15. *That spirits are in communication.*[16]

From these assumptions or postulates the following propositions are derivable:—

1. *All* so-called physical qualities such as extension, solidity, figure, and motion are, like color, *psychical or subjective, i.e.,* are identical with (sensations or) ideas in some spirit.

2. A *physical thing* is the collection or union of these ideas

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[8] Cf. Berkeley, *Principles of Human Knowledge,* ed. Fraser, § 26.

[9] *Ibid.,* §§ 1, 30-35, 37, 38.

[10] *Ibid.,* §§ 9-12.

[11] *Ibid.,* §§ 1, 2, 38, 42-44, 67; cf. references for 2; also *Theory of Vision,* § 87.

[12] *Ibid.,* §§ 3-6.

[13] *Ibid.,* § 26.

[14] *Ibid.,* §§ 30-32, 45.

[15] *Ibid.,* §§ 2, 7, 89, 142.

[16] *Ibid.,* § 1, and all through the Principles as a tacit assumption.

that some spirit has, and that are *held together* by the spirit which has them.

3. *The physical "world"* is the *totality of such things,*—each as a group of sensations that belong to some spirit, with perhaps many spirits having similar sensations.

4. If a finite spirit does not perceive, nevertheless God, as *the infinite and eternal perceiver,* is perceiving, so that *physical things continue to exist as identical with His percepts.* There is, therefore, *an order, regularity, and uniformity,* a persistence and constancy in the universe, that are independent of all finite spirits and of their percepts, but that are *dependent upon the eternal perception of the Deity.*

This eternal perception follows from the *theistic* definition of the Deity as an all-knowing, all-perceiving, as well as all-powerful being, and from the fact that *time* is "made" *independent* of *ideas,* even as are spirits. The *postulation* of the *order, regularity, and uniformity of nature,* together with the *assumption,* that finite beings might *not* exist, or might *not* perceive, demands the conclusion, that the Deity is this eternally perceiving being, while, conversely, this conclusion, *as an hypothesis,* accounts for that order and uniformity.

7.

All these conclusions may be stated together briefly in the form, that the "world" consists of many finite spirits and one Infinite Spirit, and of their ideas—time alone being the exception.

The order of the assumptions and deductions as they are above stated is not the order of the original argument for Subjective Idealism, as it occurred psychologically in the mind of Berkeley, and as it was presented in *The Principles of Human Knowledge,*—but it is, in fact, almost *the inverse* of the order of that historical argument. Berkeley's argument proceeded from the traditional assumption of the times, as stated in Locke's *Essay Concerning Human Understanding,* that certain qualities of things such as *color* were *subjective* or *psychical,* so that their *esse* was their *percipi,* although they were, in common sense, "projected" into the object. For Locke, in accordance with the *mechanistic philosophy of his time,* these *secondary* qualities or sensations were *caused* by the *objective* motions, in space, of solid, figured particles. But Berkeley argued that *all* *qualities were perceived,* and, therefore, that to be consistent, one must hold *either* that *all* were objective or that *all* were subjective, and of the two possibilities, he chose the second. Further, both Berkeley and Locke held the position, although they did not adhere to it consistently, that only that was a fact or an *existent* which was directly perceived, or the idea of which could be traced back to sense-perception. But neither Locke nor Berkeley could discover any perception of that substance which, in accordance with the traditional definition, was held to be the core or substratum in which physical qualities inhere. Locke, nevertheless, retained this substance-doctrine, while Berkeley gave it up. For Berkeley, then, *a physical thing was only a group of qualities.* It followed—since any physical quality was identical with a sensation—that *a physical thing was identical merely with a group of sensations,* and that *no matter* in the sense of a material substratum was existent.

But Berkeley could not escape the influence of the traditional view that ideas were known by, or belonged to, some soul or spirit. Faced by the consequence, therefore, that the world of physical things would be non-existent, if finite spirits should cease to perceive, he saved that world in its order and uniformity by *assuming* the perception of an infinite and eternal spirit, God. Thus he made his system comply with the demands of both common sense and science.

However, it is not our purpose to examine Subjective Idealism in its historical setting, but to consider it as a position which today, independently of its history, might lay some claim to acceptance.

The position postulates, in its foundation, the *modification theory of relations* as holding for the relation between each finite spirit, *KS*, and the infinite spirit, God. It postulates also the *underlying-reality theory of relations* as holding for each spirit, whether finite or infinite. Thus a spirit, as distinct from sensations and ideas, is maintained to be an underlying psychical substratum in which sensations and ideas inhere, and which holds these together as so many *attributes.* This means that both kinds of spirits are really postulated as *psychical things,* while the infinite spirit is assumed to *act on* finite spirits so as to *cause* in them certain effects, just as in Phenomenalism *things-*

in-themselves are assumed to act on transcendental selves. These effects are sensations and ideas, even as they are in Phenomenalism. But, whereas in the latter position, there is "something" *to be known,* if possible, namely, an X or *thing-in-itself,* which is modified by being known, in Subjective Idealism this is not the case. Rather, in this last theory, it is held that only the *effects* or sensations, and that which is derived from them, namely, ideas, are known. For Subjectivism, also, specific sensations are identical with the specific qualities of *things,* and specific groups of sensations are identical with specific things. In contrast with this, in Phenomenalism a sensation and a physical quality are *numerically* distinct and yet between the two there is a *correspondence* which results from the *action* of the *knowing self* on *things-in-themselves* to produce X^{KS}, and of *things-in-themselves* on *knowing selves* to produce KS^{X}. It is, therefore, indifferent whether we say that we know the modified things-in-themselves *and* the sensations, or only the latter.

Subjective Idealism is derived, then, in much the same way as is Phenomenalism, but there is the difference, that for Subjectivism knowing *makes or creates* its object *completely,* whereas for Phenomenalism there is an object or thing-in-itself which is only *modified* in being known. But this difference is, perhaps, not essential, since, if things-in-themselves did not exist at all (and how, in Phenomenalism, they can be *known* to exist, is a question), the result would be the same, for we could still have our sensations and ideas, with these playing quite the same rôle as do the *physical things* of Subjective Idealism. It is only provided one wishes to *account* for the occurence of sensations and ideas, that he must assume some *cause,* but this cause might as well be a Deity, as it is maintained to be in Subjective Idealism, as a group of things-in-themselves, as it is held to be in Phenomenalism.

II. SUBJECTIVISM'S SOLUTION OF PROBLEMS; CRITICISM

With these the main outlines of Subjective Idealism as a philosophy that gives a specific solution to the *epistemological problem,* we may next consider those solutions of other problems which it either derives *or presupposes.*

First, we find that the position *rests upon* certain assumptions, both *epistemological* and *ontological,* which it presupposes *but does not prove.* Thus, *e.g.*, it takes a distinctly *realistic* position as regards that *complex object* or *state of affairs* concerning which it lays claim to present true knowledge. For it presupposes that it is quite possible to know the real *state of affairs* concerning *spirits* and their ideas. Accordingly it presupposes that the knowing processes of the investigator, although they are related to this *state of affairs,* do not in the least create, alter, or affect either it or the spirits and ideas of which it holds. The ego-centric predicament is thus presupposed to be solved for *these specific knowings,* and, accordingly, *for the relation between them and their objects, the theory of external relations is presupposed.*

The *state of affairs* which is thus known concerns, however, not only finite spirits and their ideas, but also the Infinite Spirit and His ideas. Toward these entities, and their relationships to one another, Subjectivism thus assumes a distinctly realistic position. But this epistemological or logical assumption is itself the basic *ontology* of Subjectivism.

This basic ontology is *extended* by certain *cosmological* and further *logical* doctrines. Thus, as regards the so-called *physical world,* Subjectivism maintains that only that which is concretely perceived is real. For example, the specific color and hardness of my pen are real, but color and hardness *in general* are not. Universal and abstract terms *concerning the physical world,* are, for Subjectivism, mere words. They are not even ideas. This is its Nominalism. It follows from this, that there is no such ''thing'' as a physical substance or *substratum in general.* But, on the other hand, one does not perceive any *particular, concrete substratum,* but only qualities, and so it follows, that a substratum does not exist at all.

This ontology is completed by the further assumption, in accordance with certain scientific theories that were current in the seventeenth and eighteenth centuries, that certain qualities, such as color (and temperature), though sensed as belonging to things, are really only psychical and subjective, *i.e.*, it is assumed that the sensation *and* the specific color sensed are numerically identical—although they are distinguished.

The remaining ontology of Subjectivism is inferred from this assumed basis. Thus from the assumptions, (1) that some qualities are subjective, and (2) that all qualities are perceived, it is concluded (3) that *all* qualities are subjective. From this conclusion together with the postulates (4) that only that which is perceived is real, and (5) that there is no perception of material substance, it is concluded that a physical thing is only a group of sensations or qualities, and also that there is no material substance in the world.

That which is regarded as the usual objective *cause* of sensations being thus done away with, causation is nevertheless assumed in order to comply with the fact, that sensations come to us against our will. This means that *some cause* for sensations is postulated, and this cause is identified with God, the Infinite Spirit.

The completed ontology of Subjectivism, is, therefore, that *all* existence is psychical, mental, conscious, or spiritual. This is the position's Qualitative Monism. Yet there are many *finite* spirits, and One Infinite Spirit, each spirit having many ideas. This is the position's Pluralism.

In its *cosmology* Subjectivism grants the usual order, regularity, and constancy of the universe, as accepted, *e.g.*, by science. To account for this, God's eternal perception is postulated. Yet with God as both the *eternal perceiver and the cause of our ideas,* there is opportunity for *exceptions* to the order of nature, with these exceptions identical, perhaps, with miracles. Also, with God thus *distinct* from finite spirits, and, as cause, in *control* of ideas, and therefore of qualities and of things (since a thing is only a group of sensations), there is opportunity for God to work His *purposes* and accomplish His aims. This is Subjectivism's Theism and its Transcendent or External Teleology, and therewith, also, is the value-problem given a specific solution.

The solution of the *psychological problem* which Subjectivism offers is mostly contained in its basic ontology. Specific sensations and ideas are the possessions or attributes of souls or spirits. The soul or spirit is the true inward *self* that underlies, as a *psychical substance,* the changing stream of sensations, memory, ideas, and the like, which in turn constitute the *empirical self.*

In its *epistemology* Subjectivism is *absolutistic* and *realistic.* It claims absolute truth for its own specific account of the universe as given in its solution of the several philosophical problems. That account is offered as presenting the *states of affairs* of the universe *as they really are,* and *not* as they merely *appear,* or as we make them, or as they merely *satisfy* us and *"work" successfully.* Subjectivism, therefore, in that epistemological position which it takes toward itself, will have nothing to do with Phenomenalism, *Subjectivism,* or Pragmatism. Indeed, just as each of these positions interprets itself absolutistically and realistically, so also does Subjectivism.

But Subjectivism clearly involves certain inconsistencies. Thus it fails to observe consistently its main position, that the *existence* of (some) things is *identical with their being perceived or known,* for, as is evident, it does *not* apply this position to the knowledge of *other spirits* and of their ideas. If it did this it would mean, that *all other spirits,—even God himself*—would be merely *one spirit's ideas,* so that the whole universe would be identical with *one* spirit's consciousness, cr with the psychical attributes of a single spiritual substance which is a *self.* This *consistent* development of Subjectivism is called *Solipsism.* It is evident, however, that Solipsism does not solve any important philosophical or scientific problems, since, by bringing everything within one consciousness, it leaves *all the problems* as to the *further* character and relations of "things" still remaining within that one consciousness.

The other *consistent* development of Subjectivism makes the position self-defeating. For, since it is presupposed or maintained by Subjectivism that *other spirits* are not identical with their *percipi* (or with their *concipi*) by any one spirit, the only consistent conclusion is, that other "things," such as physical qualities, may also be not so identical, but that they may be quite as independent of being known and quite as numerically distinct from ideas as are spirits. In other words, with the *egocentric predicament presupposed* as solved for the knowledge of spirits, it cannot, without good reasons therefor, be supposed to imply special difficulties as regards the knowledge of other entities.

Similar and closely allied inconsistencies affect Subjectivism in a number of other respects. Thus concerning the knowledge of spirits and of their ideas, Subjectivism accepts the position that true knowledge is a *copy* of its object, while, as regards the knowledge of physical qualities, it makes knowing *creative*. But the inconsistencies which have been indicated suffice to show that the position is not one that can lay very strong claim to acceptance, although it is a position that, granted its premises, seems plausible up to a certain point. Accordingly we turn to the examination of other philosophies.

CHAPTER XXXI

POSITIVISM[1]

I. DERIVATION

POSITIVISM is that position which, historically, was arrived at by avoiding some of the *inconsistencies* of Subjectivism, and, although it can, like other positions, be derived *logically* from certain assumptions or postulates, nevertheless, to present the historical derivation is, at this point, advantageous. The logical derivation will be given subsequently.

The Subjective Idealism or Psychism of Berkeley was derived from the partial Realism and partial Phenomenalism of John Locke (1632-1704).[2] Locke accepted the dominant scientific view of his time as to the real nature of the external world, namely, that this consisted only of solid or impenetrable, extended, figured articles *in motion*.[3] Groups of these particles were held to *act causally* on our sense organs, whatever these organs might be.[4] The result was, that in some cases sensations were *like*,[5] in other cases[6] *unlike* objective qualities. Thus sensations of solidity, extension, figure, and motion were like their causes. Therefore in these cases "things" were known as they really are, and the known "thing" was distinct from and independent of the knowing. This is part of Locke's Realism—a Realism that has, indeed, persisted in science in perhaps only slightly modified form even to the present. In other cases, however, there was a *transformation* of quality. For example, the *motion* of *solid, extended* particles produced (the sensation of) *color*, but color was very unlike such particles in motion. This is Locke's Phenomenalism.

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[1] Positivism has attracted a large number of philosophers and scientists, chief among whom are the following: Hume (1711-1776), ***Treatise Upon Human Nature***, 1739-40; five volumes of Essays that include the ***Enquiry Concerning Human Understanding***, 1748; ***Works***, ed. by Green and Grose, 4 vols., 1874, new ed. 1909; J. S. Mill (1806-73), ***Logic***, 1843; ***Principles of Political Economy***, 1848; ***Utilitarianism***, 1861; ***Examination of Sir William Hamilton's Philosophy***, 1865; new ed. of Mill's works in the New Universal Library; Auguste Comte (1789-1857), ***Cours de Philosophie positive***, 6 vols., 1830-42; abridged trans. by H. Martineau; cf. J. S. Mill, ***Comte and Positivism***; R. Avenarius, ***Kritik d. reinen Erfahrung***, 1888; ***Der Menschliche Weltbebriff***, 1891; Karl Pearson, ***Grammar of Science***, 1892, 2nd ed., 1900; E. Mach, ***Analysis of Sensations***, 1886, 5th ed., 1906, trans. by C. M. Williams; also, ***Popular Scientific Lectures***, 4th ed., 1910; Renan, Taine, Ribot, Tarde, are positivistic.

Subjectivism, with Berkeley, insists, as we have seen, (1) that only that which is perceived is real, (2) that material *substance* is not perceived, (3) that in the physical world only the qualities are perceived, and (4) that *all* qualities are, *like color, subjective or psychical.*

Historically, therefore, Berkeley's Subjectivism was derived from Locke's Realism and Phenomenalism, although from the standpoint of modern logical theory, it can, as we have seen, be derived in a manner that is independent of its historical development. This is done by assuming God, *instead* of moving particles, to be the *cause* of all sensations.[7]

However, *both logically and historically,* Subjectivism rests upon the *assumption* that there are *thing-like* spirits that have sensations and ideas,[8] and that these last *inhere* in the spirit, as qualities in an underlying substratum. Indeed, under the influence of the Aristotelian tradition, Subjectivism rests on the assumption,—as a tacit application of the underlying-reality theory of relations,—that the soul or spirit *is a psychical substance.*[9] And yet, with it also a basic assumption of Subjectivism, that *only* that which is perceived is real, this assumption of a spiritual substance *cannot consistently be maintained, since of such a substance there is no perception.*

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[2] *Essay Concerning Human Understanding*, ed. by Fraser, 2 vols.

[3] *Essay Concerning Human Understanding*, Bk. II., Chap. VIII., 9, 12, 13, 17, 23, and Chap. XXIII., 26.

[4] *Op. cit.*, especially, Bk. II., Chap. VIII., 5, 23, 24, 25.

[5] *Op. cit.*, Bk. II., Chap. VIII., 7, 9, 14, 24.

[6] *Op. cit.*, Bk. II., Chap. VIII., 7, 9, 10, 13, 14, 24.

[7] Locke, Berkeley, and Kant each clearly assume such a *cause*. It is *moving particles* for Locke, *God* for Berkeley, *things-in-themselves* for Kant. However, if all that we can know directly are *ideas*, then it is clear that it is only *from the assumption or postulation of the principle of causation* that we can *infer* that *ideas* (*as effects*) *have a cause*. And what difference does it make *by what name* we call this cause?

The dilemma is clear. On the one hand, if there is a spiritual substance that is independent of and not numerically identical with the perception of it, then there may also be a *physical* substance and physical qualities, one or both, that are independent of perception. But, on the other hand, if there is *no physical substance,* because it is not perceived, and if *physical qualities* are identical with sensations, then, seemingly, one should conclude that there is no spiritual substance, *if* there is no perception of it, and that there *are* only sensations and ideas.

Positivism in its historical origin takes the second horn of this dilemma. Discovering the inconsistency between the basic postulates of Subjectivism, (1) that there *are* spirits, *and* (2) that only that which is perceived is real,[10] Positivism gives up the first assumption, and maintains that there are only impressions (sensations) and ideas.[11] *Only of these are we absolutely and positively certain.* Only sensations and ideas and the mere proximities, sequences, similarities, and differences among these, are given as *facts.*[12] All else is only inferred, and is, therefore, *not certain,* but doubtful, and, perhaps, *not fact at all,* but only belief and superstition and human invention.

Positivism thus puts into the limbo of only the probable and the possible the many entities which other philosophical positions either assume as fundamental and as absolutely and necessarily true, or which they reach by *inference.* Material and spiritual substances, causes and effects, a numerically single underlying reality in the universe, categories of thought, a deity,[13] logical laws, and many other "things," *all* suffer this fate,[14] and only that flow of sensations and ideas which is centered around the idea of a self remains certain and undeniable. All else takes its place in the realm of non-fact and error.

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[8] See the previous chapter.
[9] Cf. Locke, Bk. II., Chap. XXIII. ff.
[10] Berkeley, *Principles,* §§ 3-6.
[11] Hume, *Treatise,* Bk. I., Part I., section vi.
[12] Hume, *Treatise,* Bk. I., Part I., sections i.-vii.

But with it thus once demonstrated that sensations and ideas are the *only* facts,[15] so that there are no other facts with which to contrast them, the important and interesting question arises, whether one is logically justified in regarding these entities as *sensations* in the sense in which this term is used in Subjectivism and Phenomenalism, namely, as something *psychical or mental.* For, by the traditionally accepted definition, the psychical or the mental is that which is the manifestation of a spirit, or that which is *not* material, or both. But with *both* spirits *and* matter done away with, Positivism can no longer use this definition. Its sensations and ideas become, therefore, only *unspecifiable "elements" or X's*—entities that are undefinable in their *essence,* that are neither physical nor mental, and that are *contrastable only as regards their own kinds.* Possibly *the excellent opportunity* is thereby furnished of getting away from the necessity of finding *what they are,* and so of being free to ascertain *what they do,* in terms of one another.

If we thus confine and correct Positivism, we have a very interesting, but a very unusual philosophy. In the historical development of the position, physical or material substance was first eliminated, and next, all physical qualities were, like color, "made" *subjective.* There remained only spirits *and* their sensations and ideas. Then spiritual substance was eliminated. As a result only sensations and ideas were left, with *sensation* and *existence* defined as identical. The further results followed (1) that there is nothing with which to contrast sensations; (2) that *existents* are *X's, neither psychical nor physical;* and (3) that, if there were no *X's,* there would be no existents. Existents or facts are reduced, therefore, to *the mere X's of the present moment,* or, if there is only one *X,* to this *X,*—whatever it may be. Thus developed consistently, Positivism outdoes

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[13] Hume, *Treatise,* Bk. I., Part IV., section v.

[14] Hume, *Treatise,* Bk. I., Part I., section vi; also Bk. I., Part III., in a number of sections.

[15] Hume, *Treatise,* Bk. I., Part II., section vi.

Solipsism, since, for Positivism, everything is not even *my* or *your* ideas,—within *my* or *your* consciousness, *but is only an X, now, and not even past* or future nor—consistently—*even present.*

It becomes evident, then, that it is impossible consistently to derive such a position from certain postulates; *for the very character of the position itself precludes* any *general* proposition, and, therefore, any *logical derivation.* Indeed, even such a *formulation* of the position as has just been given is precluded, since this formulation would, by the position's own intent, concern only that which *now is,* but nothing more.

The character of this intent can be further made clear by asking the Cartesian question: *Of what am I most certain, my conscious processes, or other "things," my past conscious states, or my present ones?* If one give the answer "my present ones," and calls these, *not* conscious processes, but *X's,* one has the meaning of the philosophy of Positivism as this is carried to the extreme of its consistent logical (?) outcome. But it is clear that, if *I* ask this question, the answer refers to *my X's,* and if you ask it, it refers to yours, with "I" and "you," however, *each* a mere *X.* Still, if *I* ask it, and yet feel that *you* also could do so, and get *the same answer,* then, am I not in some way going *beyond* my *X's* to *yours,* and am I not dealing with concrete "things" *by generic methods,* and ascribing *validity and factuality* to what is thus dealt with? Many "things" may be identical with my *X's,* or sensations, but if *I* endeavor to *convince you,* that what holds of me also holds of you, then am I not *presupposing* that the existence of your *X's* is *not* identical with that of mine? And am I not also *presupposing,* that not only that which is concretely experienced, but also that *whatever can be treated generically* is fact as well?

There seems to be no other answer to these questions than "yes." Positivism at a certain point begins to break down. By its own intent it would preclude even its own formulation. But it *is* formulated, and offered for acceptance. I, if I am a Positivist, offer the doctrine to you. Therefore I assume your *X's* not to be mine, and also formulate the position in generic terms.

However, that modern development of Positivism which has been accepted by many philosophers and well-known scientists—among them, Huxley and Mach—is not of the extreme form that has just been depicted, but is one that allows of *formulation*, of *propositions*, of *inference*, and the like. Such a Positivism may be stated and developed logically from the following *assumptions*:—[16]

I. There are *numerically distinct personalities*, each consisting of a *succession* of *occurrences* usually called *sensations and ideas*, or *experiences*, but better called undefined and indeterminate *elements* or *X's*. For each personality these *elements* are direct *facts*, certain and undeniable.

II. These *elements* occur or happen in conformity with a certain *element* called *order*, and of *order* there are *different instances*, such as those which are usually called the relations (1) of *cause and effect*, (2) of *implication*, (3) of *similarity* and *difference*, (4) of *reference to the past and future*, (5) of *inherence*, and (6) of *"belonging to." These "elements" occur* in the midst of other "elements," and *organize and relate* these. Thus, *e.g.*, "similarity" relates many "elements" called "heat," and also many called "candles," and "inherence" connects "solidity" with "candle"; in turn, "cause and effect" relates "heat" to "candle" and "melting"; while "similarity" connects *other* things with "candle" and "melting," with reference to *past*, *present*, and *future; and finally* "similarity" connects that series of elements which is "me" with that numerically distinct series which is "you." Thus, out of *certain elements, there is organized, by other elements*, that which we usually call the world of qualitatively distinct "things," such as tables and pens, and *kinds* of "things" such as *plant* and *animal*, and *very different kinds* such as *mind* and *matter*. But the *organization* in each case is merely one that itself *happens* when certain elements occur around, as it were, *certain other* elements as *organizing* centers. All is really mere fact, coming higgledy-piggledy, here cause, but there none, here similarity, but there difference, now belonging to a "you," and then to a "me."

The final result, however, is not different from the world of common sense and science, since everything is called by its usual name, although all names are really only designations of *"ele-*

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[16] Mach, *Analysis of Sensations*, pp. 10, 11, 12, 14, 17, 19, and 151 ff.

ments," or of specific *groups* of elements. "Element" itself, therefore, is either only *an element, or a group,* while "implies" is still another "element," or group of "elements." But these two "elements" are *connected,* so that we have the proposition, that *"element" implies that which is neither existent nor subsistent, neither physical nor psychical, neither inorganic nor organic, neither term nor relation. For the genus is never identical with the species.* Color is never this red nor this blue. Therefore, if "element" is the *summum genus* it is *not* one of those groups into which certain "elements" organize others. *Everything* can be called "element," just as red, blue, green, and yellow can be called colors, and *different* "things" can be called *different* "elements," just as red and green can be called different colors. But there is something in "things" over and above the mere "element" aspect, just as *a red* is something more than *mere color,* and this "something more" persists.

The chief difference made by Positivism concerns the problem, therefore, as to *what* shall be selected as the *summum genus* of—*what* shall we say?—"things," entities, or neutral entities—for each of these is itself a *summum genus.* Materialism makes this *genus* matter, Psychism makes it mind; but each, therefore, makes it *like* one of the *species,* so that, if Materialism were true, there would be *two kinds* of matter, one called *mind,* the other, *matter;* while, if Psychism were true, there would be *two kinds* of consciousness.

Positivism, in Hume, Mill, Comte, Spencer, Mach, James, and Bergson, really makes this *summum genus* "element," and thus *avoids* identifying the genus with the species. Sensation, and the psychical in general, not only are *non-material,* or, perhaps, *non-physical,* but, *with nothing to be opposed to them,* are also *non-psychical* "elements" or *X's.* Yet, starting with a plurality of *X's,* Positivism must *reinstate* much of that which it has previously ruled out. Physical things and human personalities that know physical things reappear in some form, though they be but different collocations of (similar) elements. But there may be *as much difference* between *two such collocations* as there is between the material *rose* that "by any other name would smell as sweet," *and* the spiritual *hope* "that springs eternal in the human breast."

The material and psychical worlds reappear, therefore, in Positivism. That is to be admitted as a point against the position. Yet, in *agreement* with its contentions, it is also to be admitted, that neither things nor personalities are what much traditional philosophy, science, and religion have made them. Indeed, the real intent of Positivism is to *protest* against those traditional views that put a *core* of *material substance* into physical things, and a core of *spiritual substance* into personalities. "Things" and personalities are, for Positivism, *groups* of "elements," either those which physiology and psychology study, or those with which the physical sciences are concerned. These "elements" are *not related additively,* but are *organized* by some of the many *non-additive* relations of the types that have been considered. The wholes that result may therefore have qualities that are radically different from those of the parts.

Only of such "elements" and relations, qualities and wholes, have we positive knowledge. There *may* be a core-like substance in "things," in personalities, and perhaps in the whole universe, but of such a substance we have no knowledge. Yet around the traditional assumption of such a substance there center many beliefs, superstitions, and great historical human errors,—errors that have a practical outcome, undeniably, but that are nevertheless regarded by Positivism as detrimental, since it emphasizes the identity of the progress of the human race with the throwing off of all that is *not certain,* and with the acceptance of only that which is undeniable fact.

This indicates how Positivism solves the great majority of philosophical problems. It puts them into the limbo of the uncertain, the unknown, and even the unknowable, or regards them as *false problems.* Indeed, for Positivism, philosophy is itself not positive knowledge—except that particular philosophy which is identical with Positivism's own epistemology, and that ontology on which this epistemology rests.

Positivism's epistemology rests *logically* (though not historically) on an *ontology* that is assumed, and not proved, namely, on an ontology that is *monistic* in its postulation of mere "elements" which, *as such,* are all qualitatively alike, but that is *pluralistic* in its *results,* since it is compelled to grant that there are not only *many numerically distinct* "elements," but also *many* qualitatively different collocations of these "elements."

Positivism's *cosmology* is that of *critical* natural science. This means, among other things, that the "idea" of a universal regularity, uniformity, and following-of-law is mere hypothesis, and *not* certain knowledge. Events do seem, indeed, in some cases at least, to occur with a *certain* uniformity and regularity, and the experience of *repeated sequences* of specific events undoubtedly does give rise to the belief in causes. Given the same *cause,* under the same *conditions,* and the same effect does *seem* to occur. From this we generalize, passing beyond the immediately given facts to the hypothesis of the *unequivocalness* of the connection of specific causes, conditions, and effects. In this way, both as individuals and as a race, we come to believe in the *principle of the uniformity of nature* so strongly, that, perhaps, we cannot *conceive the opposite to be a fact,* and that the principle of the unequivocal connection of cause and effect is regarded even as *a law of thought.*

But Positivism is critical. It warns us not to go beyond the facts. We should not let the expectation that is generated by past causal regularities deceive us into accepting the past as the guarantor of the future. The past may be one thing, but the future quite another. Only by waiting can one tell.

Positivism is thus *indeterministic* and *tychistic.* There may be determinism, but, if there is, it is limited, for there certainly *is indeterminism.* There *are* events that are not causally connected. There is no universal and unequivocal causal connection or world order. Indeed, *there may be no causes and no effects. "Things" may just happen.*

Little opportunity is there in Positivism, therefore, for *purpose* or even for a *single direction of all things in the universe.* Positivism, then, has *no teleology. You* and *I* may have purposes, and may plan and build. But in the universe there is no guaranty of order, much less of *universal* order and purpose. At least there is no positive knowledge of these. Indeed, the universe is not even a machine, beautifully and delicately adjusted; neither is there God, nor underlying unity, as matters of *certain* knowledge. In fact, *with chaos as much a fact as* *cosmos,* and with cosmos at best only *here* and *there* in the midst of chaos, the opportunity is small for plan, for order, for unity, for a working toward ends, and even much smaller for a purposer, an architect, a designer, or a mechanician. It is thus that Positivism deals with *theology* and the *great religious beliefs* of mankind. It relegates them to the scrap-heap of superstitions, together with other cherished beliefs and theories that are dear to common sense, religion, science, and philosophy.

With the teleological and theological problems thus dismissed, certain aspects of the *value problem* do not present themselves to Positivism at all. Ethics and æsthetics, so far as they are based on undeniably immediate experiences of course remain. But in these fields the solution of problems is only that which is to be expected. For Positivism the so-called *abstract* and *general* is always resolvable into concrete fact. Therefore *what one ought to do is traceable back to what men have done.*

For Positivism, races, nations, and sects are *facts* in the sense that there are many human personalities who are *made up* in part of *similar ideas, motives,* and *aspirations.* In this sense society, *as a group of individuals,* may demand that one *ought,* first of all, to act *out of regard for general welfare.* Positivism accepts this demand as a fact, and accordingly becomes Utilitarianism. But it also allows one so to act as to contribute to one's own pleasure, or to reach as perfect development as possible, provided this does *not,* in either case, interfere with the general welfare. Positivism thus, also, is hedonistic and perfectionistic. Likewise, in art, one cannot say that one "school" is correct, another incorrect, *by reference to a standard,*—since, for Positivism, there are many *standards.* Each standard in its own setting is correct, and no standard can be forced upon him who will not acknowledge it. In fact, as regards all values, all standards in ethics and art, Positivism closely approaches both Naturalism and Pragmatism, into which, as we shall shortly see, it is very easily transformed.

The solution which Positivism gives to the *psychological* and *epistemological* problems has already been presented at length, so that only a few more details need be mentioned. For Positivism there is no soul or spirit, single, simple, and *numerically one.* There *are* only conscious *"happenings."* Some of these, called memory-images, refer to previous conscious happenings, and thus organized, conscious "happenings" become *personalities.* But even so, these "happenings" are *conscious* only by virtue of being in a certain specific group. By themselves they are only "elements," and in another group they would be *physical.* Thus it is only *a difference in the grouping* that distinguishes the physical and the psychical.

Truth, for Positivism, very evidently cannot be defined in the traditional way, namely, that true knowledge *copies* reality. Rather, for Positivism, both truth and fact are made by *knowing.* Indeed it is here, even as it is with the difference between the *physical* and the *psychical,* only a question of a difference in the *grouping.* An "element" in one collocation (of elements) is "impression" or "idea"; in another, it is physical fact; and in still another it is truth. All knowledge is *held* to have its *origin in impressions,*—when it is *forgotten* that these ultimately are only *indeterminate "elements."* This is Sensationalism. Further, there is *no absolute standard* by which true knowledge can be determined. Fact is fact, and, if one experiences it, no one can say him nay. Thus does Positivism approach Radical Empiricism and Pragmatism, and thus is it *anti-absolutistic.* But it is also intellectualistic. It holds that things must be accepted as they are found, and this means, *e.g.,* that *not only* the *motion* which is immediately experienced as a whole, *but also* the *parts* into which *intellectual analysis* resolves motion, are *facts.* Yet Positivism excludes, or tends to exclude, from the realm of fact that which is given *immediately, e.g.,* in the religious consciousness, but it may be doubted whether or not, by its own premises, Positivism is justified in doing this. However, such an exclusion it nevertheless makes, at the same time that it prefers and uses intellectual analysis. In this respect, therefore, Positivism is frankly intellectualistic.

II. CRITICISM

The criticisms that can be made of Positivism are closely similar to those that already have been made of both Phenomenalism and Subjectivism. At certain points Positivism shows striking inconsistencies and self-contradictions.

First, the positivist who contends for his position, offering arguments for it, and presenting it as a true philosophy, especially with reference to the problem of knowledge, *tacitly presupposes* that he is portraying a *state of affairs* which, *though it is related to his own knowing,* is neither dependent on nor constituted by this. In this case, therefore, *knowing* and *the known* are *not* identical, and are *not* to be called mere "elements," with these elements *becoming knowing or object* according as they are *in* one group or another. Rather, it is here *presupposed,* that there is at least an absolute *numerical distinctness* between the *knowing* and *the known,* so that, were the former done away with, the latter would still persist as unaltered fact.

But, secondly, such a numerical distinctness between entities is *also presupposed* in the *detailed theory* of Positivism. It *may be,* that *color* and *my sensation of color* are identical, so that it is justified to call color a mere "element," which is neither physical nor psychical. *But* if *I,* playing the rôle of a positivist, set up the claim really to know about *your sensations, ideas, experiences, or "elements," then,* although *my knowing* and *yours* may be *like in kind,* I *presuppose* that they are *numerically distinct.* They are presupposed to be *so* distinct, in fact, that, were *my* knowing no longer occurring, yours still would be, even as *I* have described it in my presumably *true positivistic theory.* Here is something, therefore, namely, *your* experiences, which *I presuppose not* to be shifting as "elements" from one group to another, but to be *fixed* in that collocation which *is you.* In these two cases the *ego-centric predicament* is solved by the principle of *ideal elimination,* and the *theory of external relations* is *presupposed* as valid for *the knowing situation.*

But further, if entities, or groups of "elements," can, as in these instances, be related, and yet be numerically distinct and independent, then *other entities,* both simple and complex, also *may* be, *even such entities as sensation* and physical qualities. Thus, by this principle, an entity, *e.g.*, the *brown* of my penholder, does not cease *either* to be a physical brown *or* to be distinct from the sensation of it, *because* I now sense it. Rather, there *is* a specific brown, or, if one prefer, an *X,* that is physical. It is in a group of other physical qualities to which it is related.

The complex of these qualities is the penholder. But *now*, under certain conditions, this specific brown can get into still *other* relations, without losing the relations to the other qualities. It can, *e.g.*, get into relation with an organism and to the knowing *of* or by an organism, and yet be quite as *distinct from and independent of this knowing,* as *my* knowing is (presupposed to be) independent of *your* sensations and the like, when I, *as* the positivist, advance my theory as a true account of your and others' knowing. But if this is the case, then *the main contention* of Positivism must be given up, even as must that of Subjectivism.

Both Positivism and Subjectivism *presuppose,* therefore, as the very condition of their being advanced as true theories, that an entity *can,* without detriment to itself in any way, first be *out of relation to a knowing,* then enter into a relation with a *knowing,* and again lose this relation. This presupposition is made by the subjectivist concerning the relation between, on the one hand, *spirits* and *their ideas, and,* on the other hand, his knowing about spirits. It is made by the positivist concerning the relation between those "elements," impressions, or ideas *which are you, and his* ideas or "elements" that *"refer to you."*

Consistency demands, then, that the same presupposition be recognized and accepted for the knowing of other "things." This means (1) that in the knowing situation there is a numerical distinctness between the knowing and the "thing" known; (2) that, although these two distinct entities may be *similar* in certain respects, they may also be dissimilar in others; (3) that Subjectivism may be *forced* to admit physical qualities to be *both qualitatively and numerically* distinct from the *knowing;* (4) that Positivism is compelled to acknowledge that, although sensation and physical quality are *called* "elements," they not only are *numerically distinct,* but also are *different kinds* of "elements," even quite as different as common sense usually regards them to be; and finally, (5) that both Subjectivism and Positivism must give up their common doctrine that only *the concrete* is known; for, if both subjectivist and positivist can know the *general state of affairs* about knowing, and its relation to *objects known,* then, with the knowing in this case concrete, but the "thing" known *general,* it is presupposed, not only that the concrete, but *also that the general and abstract is knowable,* and is distinct from the knowing; and also, that there *are* not only *concrete* facts, but also *general* ones. For example, *length* is as much a fact as are *long things,* and neither is numerically identical with the *knowing* of them, or with the *word* for them, although each is identical with the *content* of knowing, *when each* is known.

But to be forced to yield this much, is, for *both* Subjectivism and Positivism, suicidal. Yielding what each is forced to in the instances just considered, Subjectivism and Positivism refute themselves. The subjectivist *cannot* consistently apply *his own theory* to that situation which *is the complex* of his own knowing *and* the *state of affairs* which he knows, and *still retain* his Subjectivism, nor can the positivist do any better. Neither can build his own particular philosophic house upon the sands of his own detailed doctrines.

The particular situation, therefore, in which, for *both* the subjectivist and the positivist, there is *a knowing* of those states of affairs which are presented in their own (supposedly true) theories, is *an instance* of the validity of the theory of external relations. They are both bound to presuppose the validity of this theory in this connection, and, therefore, in order to be consistent, for *the knowing situation in general.* And yet, with few exceptions, they reject this theory of relations for other cases of knowing. Thus, *e.g.,* the subjectivist applies the modification theory of relations to the relation between *finite* spirits and the *infinite* spirit, making the latter *act* causally on the former so as to *produce effects* called *ideas.* And the positivist applies the same theory to *his* doctrine, that an "element," *X*, *changes* its character with its *change* of membership in collocations, this change being due to the *influence* of the other elements of the complex. Both subjectivist and positivist, furthermore, in advancing their theories as holding good for the knowing situation in general, present *a general state of affairs,* and so *contradict* their other explicit statements, that *only* the particular and the concrete *is fact* and that only such fact can be known.

Consistency would seem to demand, therefore, that, in constructing a philosophical position, *candid recognition* be made of the *two principles* which our criticism brings out. The first of these is, that some terms can *gain* and *lose* certain relations to other terms without being changed or affected thereby. One such relation would seem to be *the knowing relation,* so that it may well be, that all terms or "things" can gain or lose this relation, without being affected thereby. The second principle is, that among the terms that can be known, and that are both numerically distinct from *and* independent of the knowing, are *general and abstract terms.* These are as *objective* as are particular, concrete things. This position is, historically, first advanced clearly by Plato in his doctrine of the *reality of universals,* or of ideas (*ἰδέαι*), as he called them. Indeed, Plato made *universals* even more real than concrete things, for they are timeless, whereas concrete "things" appear, and, after a time, perish.

Severe as some of these criticisms of Positivism may be, the position has, nevertheless, many points of merit. Chief among these is the fact, that it gets away from the domination of the *"substance" concept,* and emphasizes *relations* between what may be called mere "elements." In doing this, Positivism is in line with the most important developments in modern logic and science. Modern science has made its advances and won its victories by finding *what happens and is done, rather than by finding, what "things" are. Relations, events, and unattached and disembodied qualities* concern it more than do *substance and things.*

The new logic, which forms a large part of the principles of modern science, follows the same course. By breaking away from the model of *things with a core of substance in which attributes inhere,* and by distinguishing and emphasizing *different types of relations between terms,* this logic is able to solve problems that, since they baffled the Aristotelian logic, finally led to the discovery of the very narrow limitations of this logic. For example, the old logic, if strictly adhered to, cannot give an analysis of motion, or of *change* in general, that is free from contradiction. But the new logic easily solves this problem, as we have seen, by its discovery that *series* are analyzable into terms that are related in a *non-additive* way. *Mo-*

tion is such a series, whether it be continuous, or discontinuous, *each term* of the series being itself *a complex* of *"an instant related to a specific point in a one-one manner."*

In the broad general manner just indicated all modern science has become positivistic, and some of the results of such a positivism will be portrayed in a later section. They constitute the contribution of a method that may be called The New Rationalism, the positive content of which is a philosophy that is called the New Realism. Of this method and position it may be said, at this point, that in them *reason* is accepted as being *as certain a revealer of fact as sensation.* But the facts thus revealed are not all of one kind. *All* are *not* mere "elements," and nothing more; neither are all psychical, nor all material. Rather, they are of the *most various kinds.* For example, there are *generic facts* or *states of affairs,* and there are *concrete, particular* facts that are correlated with specific places and times. There are also subsistents, which are timeless and spaceless, and there are existents which are "in" time and space. Existents are of two kinds, mental and physical, and among these there are as many different kinds as such special sciences as physics, chemistry, physiology, and psychology discover. Also, *among subsistents* there are both *classes* and *individuals,* and as many *kinds* as such sciences as ethics, logic, mathematics, and æsthetics recognize.

For the New Rationalism and the New Realism, then, the verdict of the special sciences is to be accepted mostly at its face value, though always with the condition, of course, that the future may bring the discovery of errors and of new facts. But, in general, all these kinds of facts receive *no universal reinterpretation and transformation* as they do when they are made "phenomena" for Phenomenalism, "ideas" for Subjectivism, "elements" for Positivism, matter for Materialism, and mere "racial inventions" for Pragmatism. Each of these reinterpretations is found to be quite unjustified and invalid, and the criticism which is thus developed is found to lead to Rationalism and to Realism.

CHAPTER XXXII

NATURALISM

POSITIVISM, under the widespread influence of the natural sciences during the last century, developed into Naturalism as that philosophy which contends that *only that is fact which conforms to the most general laws of a certain limited group of sciences,* namely, physics, chemistry, biology, and, perhaps, psychology. Accordingly, one of the chief characteristics of Naturalism, as it is worked out in detail, is, that the principles of *conservation* and of *evolution* are used to apply in some manner to *everything.* However, the position is, almost without exception, not only vague but also neglectful of many problems. Indeed, very frequently, some of the most important philosophical problems either are ruled out of court with a high hand, or are not recognized at all because of sheer ignorance. Notwithstanding this, Naturalism is more widely accepted among philosophically-minded scientists than any other philosophy.

Naturalism is chiefly characterized by its insistence that *all* fact is either physical or mental, *i.e.,* that all fact is *existent.* Inconsistently also with its own presuppositions Naturalism contends that all fact is only concrete and particular, maintaining, in its explicit theory, that there is no such "thing" as a *general state of affairs even* of a group of concrete "things." Also, there is no such "thing," for it, as a *subsistent.* Thus, *e.g.,* it contends that there is no such "thing" as a *number* that is not *the number of something,* or a circle that is not the property of a physical circular object.

With everything thus regarded as either physical or mental, Naturalism is, nevertheless, frequently most vague and indefinite in its treatment of the mental. The position *tends* to be *dualistic* in its solution of this problem, but it is not clearly so. It accepts the physical world at its face value, as this is presented by astronomy, physics, chemistry, and other natural sciences. For this realm it usually accepts the law of the *conservation of energy* and of matter as the leading principle, while from the biological sciences it gets the notion, that *everything develops and evolves,* with consciousness, perhaps, no exception to this. But just what consciousness is, Naturalism does not make clear, —indeed it does not seem to recognize that consciousness presents a serious problem. Sensations, memory images, ideas, and the like, are spoken about and written of, but little attempt is made to study these entities. Sometimes they are placed *in clear contrast* with physical entities by the negative characterization, that they are non-spatial, weightless, and the like. And yet, *by the argument,* that conscious entities are *something,* and therefore *cannot come from nothing,* nor yet from physical energy, so that they can come only out of a *preceding consciousness* of some kind, the *principle of conservation* is applied to them even as it is to the physical world. The result is, that Naturalism develops into a complete *dualism* of two energies, the one physical and the other mental, with each "wherever" the other is, like the inside and the outside of a sphere.

However, Naturalism does not always take even this fairly definite position. Sometimes it quite neglects the problem as to the nature of those processes that are called mental, and, though it regards them as subject to the law of *evolution, omits* to develop the consequences of this assumption. The tendency thus manifested brings Naturalism to the verge of Materialism—to the position, namely, that *all fact* without exception is of the nature of physical or material "things"—either matter, or energy, or, as the more sophisticated physicists of the day would claim, electricity.

As examples of problems that Naturalism quite overlooks, or is ignorant of, one may cite the questions that concern the nature of space, time, and number. Naturalism either sees no problems regarding these entities, or, if it sees problems, solves them dogmatically and with the maximum of vagueness and inaccuracy by regarding space, time, and number *as attributes of physical "things,"* claiming that, did the latter not exist, *then were the former in no sense fact.* In this respect Naturalism departs widely from the conclusions of science, if science includes not alone physics, chemistry, biology, and the like, but also geometry and *pure* mathematics.

Naturalism, as has been said, has an historical and, to a certain extent, a logical development out of Positivism. Positivism was first definitely presented by Hume, but has been maintained very recently by such writers as Mach. If, now, we take the "elements" of Positivism and make *definite entities* of these, after the manner of the natural sciences in their insistence upon the *different kinds* of atoms, molecules, cells, etc., and if we then further insist, that *all "things" causally interact* and evolve, we have Naturalism.

Thus, from the standpoint of modern logic, Naturalism is derived by assuming the *modification theory of relations* to hold good for everything without exception. Naturalism makes this assumption in its dogmatic insistence that *all* "things," even space, time, and numbers *causally affect one another,* thereby *producing* some "things," and *eliminating* others. This means, that, from the standpoint of natural science, everything is either adapted to or eliminated by its environment, and that *some scheme of evolution,* Darwinian, Lamarckian, de Vriesian, or Bergsonian, is always incorporated in Naturalism.[1]

On this general naturalistic foundation, five more detailed positions are developed. These are (1) Naturalism in its more *detailed* form, (2) Materialism, (3) Psychism, (4) Dualism or Parallelism, and finally, (5) Pragmatism. Accordingly, each of these positions is *naturalistic.*

I. DETAILED NATURALISM [2]

Detailed Naturalism merely develops this general naturalistic foundation by incorporating within itself all the natural sciences, especially Astronomy, Geology, Mechanics, Physics,

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[1] Among the philosophers who maintain this generic naturalism are: J. S. Mill, *op. cit.;* Huxley in his *Evolution and Other Essays,* and Brooks in *The Foundations of Zoölogy.* It is the position that is also taken by most biologists, especially by those who are of the mechanistic, and not of the vitalistic school. Philosophers who are naturalistic, are, *e.g.,* Helvetius, Condorcet, Montesquieu. Cf. Lange, *History of Materialism,* 3 vols., translation by Thomas, 1892.

[2] Herbert Spencer (1820-1903) is the great exponent of this detailed naturalism. Spencer's leading concept is evolution, and this he applies to almost everything, including consciousness in all its aspects. Yet Spencer is not a parallelist, as are many biologists and psychologists, nor is he a materialist or a psychist (see the discussion following). Spencer's works that show this detailed naturalism are: *Principles of Psychology,* 1855; *First Principles,* 1860-62; *Principles of Biology,* 1864-67; *Principles of Ethics,* 1879-93; *Principles of Sociology,* 1876-96.

Chemistry, Biology, and Psychology. It results that such human "institutions" as the family, government and law, language, religion, art and literature, and even science itself, are interpreted in strict conformity with the *evolution* of living forms, while the cosmic evolution of suns and of planets, of atoms and of chemical compounds, is accepted quite uncritically. Thus it is, that the ontology, cosmology, teleology, and ethics of Naturalism are essentially those of the *natural sciences.* Such sciences as Mathematics are either ignored completely, or are transformed into *applied sciences* in every instance.

Toward all theology Naturalism takes a skeptical, or at least an agnostic position. For, with its emphasis upon the senses as the only revealers of fact, Naturalism finds little evidence of a God of any kind—not even as an objective entity that is identical with an *effective worth- and value-principle* in the general make-up of the universe. Since God cannot be seen or touched or heard, and the like, Naturalism concludes that there is no God, or at least holds its judgment in suspense. And toward such worths and values as it does accept, Naturalism takes the position of a thorough-going Evolutionism. Goodness and beauty, right and wrong are in each case what they are, *only* because they have *evolved* and survived.

It is toward *truth* alone that this detailed yet uncritical Naturalism takes an *absolutistic,* as opposed to a relativistic and evolutionistic position. For, although the results of the empirical, natural sciences are allowed always to be open to revision, and to be, in this sense, tentative, nevertheless Naturalism holds that there is nothing in the knowing situation to prevent our getting at facts essentially as they are, and that, if facts are thus known, *there is truth.* For Naturalism, therefore, knowing is *not constitutive,* as it is in Phenomenalism; nor are *all facts psychical* in nature, as in Subjectivism; nor are they mere *"elements,"* as in Positivism. Rather, facts are held to be *what* they are found to be in the *natural sciences,* and it is also maintained that facts would be quite unaltered, should all knowing disappear. Naturalism thus accepts the theory that there *is an absolute truth* to be attained, and that true knowledge is a sort of *copy* of fact.

However, in this respect Naturalism is *inconsistent* with its own *explicit* doctrine, that *everything causally interacts* with other things, *evolves,* and is an *adaptation.* For, if this "causal doctrine" be of universal validity, then, of course, knowing must also *causally interact* with that which is known, and, therefore, *both modify, and be modified.* The *consistent* development of this *universal "causal" doctrine* therefore leads to Phenomenalism, so that, not to accept *this conclusion,* is to gloss over a glaring inconsistency and contradiction that invalidates the main naturalistic contention.

While in its *explicit* epistemology, therefore, detailed Naturalism aligns itself, though somewhat confusedly, with the traditional "copy-theory" of truth, it does this at the cost of being inconsistent with its own basic doctrines of a universal interaction, evolution, and adaptation. The only excuse for its committing this inconsistency, and yet for not noticing it, is, that the adherents of Naturalism are carried off their feet by the methods and results of the natural sciences, and are not aware either of those delicate questions which are involved in the problem of knowledge, or of the precise logical principles whether of the old or of the new logic.

Toward the psychological problem detailed Naturalism maintains the negative attitude of ignoring the issue. It rests content with the vague and uncritical view, that cognitive, emotional, and volitional processes lack such characteristics as extension and weight, and is satisfied to use the mere names "percept," "idea," "concept," emotion," etc., without further inquiry, merely insisting that the entities denoted by these names are *"natural* things"—whatever that term may mean—and are, therefore, subject to all those main principles, such as *evolution,* to which other *"natural* things" are subject. However, Naturalism does not develop the *consequences* of this position, but *leaves this to other naturalistic philosophies,* such as Materialism, Psychism, Parallelism, and Pragmatism. Naturalism, like Positivism, also gives up the doctrine of an ego, or a soul, but offers no substitute for these, other than what it vaguely calls ideas, percepts, and the like. But what these entities are, or what consciousness is, Naturalism leaves largely undetermined.

II. MATERIALISM, DUALISM, AND PSYCHISM:

MATERIALISM [3]

These three positions have the advantage over Naturalism, that they are the results of recognizing the problem of consciousness, and of attempting to solve it. All three positions are naturalistic, yet each is a definite and distinct doctrine.

In regard to the other philosophical problems these positions accept essentially the same solutions as does Naturalism. Thus their explicit epistemology, ethics, æsthetics, theology, teleology, cosmology, and ontology are essentially those of that theory. For each the specific position, in each of these several branches, is one that is derived somewhat uncritically and vaguely by putting together into *one* doctrine the results of the *natural* sciences. Thus, in each, *evolution* plays a leading rôle; in each it is contended that everything interacts, evolves, and adapts. For each, also, there is a *conservation* of "something"—something that, in its total quantity, is neither increased nor decreased, neither created nor destroyed, and that in the midst of change, only alters, or seems to alter, its *form or qualities.*

For modern Materialism this "something" that underlies everything else, and that both evolves and changes, and yet is conserved, is *physical energy.* Accordingly, *consciousness* is regarded as only *a special kind* of this energy, analogous to electrical or kinetic or potential energy, or else it is regarded as a factor of some specific physical energy, even as electrical potential or intensity is an aspect or factor of electrical energy. Percepts, ideas, emotions, and the like, thus become physical facts that interact with other physical facts, and that are *brought into existence,* in agreement with the principle of evolution, by a transformation out of some other kind of physical energy, or factor thereof. When *the specific conditions* for this transformation *first* occurred in the evolution of life on this planet, then some specific instance of some specific kind of consciousness first arose. Also, when similar specific conditions occur in any individual, as *e.g.*, in the transition from dreamless sleep to wakening, then again some specific energy-transformation occurs.

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[3] Materialism has appeared many times in the history of philosophy. Among the ancients Leucippus, Democritus, and Lucretius were materialists. In the seventeenth century Thomas Hobbes (1588-1679), and, in the eighteenth, Condillac, d'Holbach, Lamettrie, and Diderot were adherents of the position. In the nineteenth century, in Germany, Büchner, *Kraft und Stoff,* 1st ed., 1855, Moleschott, Karl Vogt, and later, Haeckel, *The Riddle of the Universe,* trans, by McCabe, have been widely read, and have been of much influence. In recent years Ostwald, *Naturphilosophie,* 1902, trans. by Seltzer, and J. Loeb, *Physiology of the Brain and the Mechanistic Conception of Life,* are supporters of this position.

Only in its ontology, then, does Materialism differ from Naturalism, for, while the latter position maintains insistently, though vaguely, that there is a fundamental difference between mind and matter, Materialism, using evidence from such sciences as geology, biology, and physiology, concludes that consciousness is only matter or energy. For it there is no more difference between mind and matter than there is between heat and electricity.

One characteristic of Materialism, however, that is usually overlooked, even by the materialist himself, is that, *consistently* with its own main *explicit* principles, it is a thorough-going *phenomenalistic* philosophy. This is the case, notwithstanding the fact, that the materialist, like all other philosophers, *tacitly* grants, in presenting his position for others to accept, that his own knowing does *not causally* affect the *state of affairs* of which his materialistic philosophy is an account, and that those knowing processes in which he and others know concrete physical facts, do *not* affect or constitute these facts. Nevertheless, by the foundation principles of Materialism, namely, that all so-called conscious processes are really physical, and that *all physical "things" causally interact and affect one another*, it is implied that *every specific knowing process must affect, modify, and alter the thing known.* This position, however, is none other than Phenomenalism. But this consequence of the explicit teachings of Materialism is in direct contradiction with that *tacit* presupposition which the materialist makes with reference to the relation between his own knowing processes and the "things" known. For, when the materialist *accepts the results of the natural sciences* to incorporate them in his Materialism, he tacitly assumes that all knowing could be eliminated and yet material (known) entities be *quite unaffected thereby.*

III. UNIVERSAL DUALISM OR PARALLELISM[4]

The main contention of this position is, that that "*something*" which underlies all evolution and yet is conserved in quantity, is not physical energy alone, but also psychical energy. The tacit or explicit *postulates* or *assumptions* from which this "*psycho-physical parallelism*" is derived may be stated as follows:—

I. Introspection is reliable and valid, *i.e.*, its deliverances with reference to the nature of consciousness are to be accepted. This means that consciousness is revealed as *fundamentally and essentially different from physical "things"; i.e.*, the former is given as at least lacking certain characteristics that the latter have, particularly the characteristics of extension and mass.

II. *All physical "things"* are subject to the principle of the *conservation of energy*, in accordance with which, in all change, there is as much energy in the effect as in the cause. Energy is only transformed. No energy is lost either in specific isolated systems, or in the whole universe. In this respect the physical universe is a *closed series.*

The conclusion that is derived from these premises is, that consciousness can in no case, either in the development of the individual or in its historical origin, come from physical energy, since such a *transformation* would mean, that some physical energy disappears *as energy*, so that the principle of conservation would be violated. Consciousness is, therefore, left hanging in the air, unless some way can be found to give it firmer support. This is accomplished by assuming that

III. In all change it is *impossible that something should come from nothing,* and disappear into nothing. *Ex nihilo*

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[4] This position was first given definite formulation by Descartes in both his *Discourse* and his *Meditations;* the majority of contemporaneous psychologists previous to the recent behavioristic school have taken this position in their text-books; J. R. Angell is a good example. A good statement of the position is given by G. E. Müller, "Zur Psychophysik der Gesichtsempfindung," *Zeitsch. f. Psych.*, 1896 (cf. Mach, *Analysis of Sensations*, trans., pp. 26-40); by Ward, *Naturalism and Agnosticism*, Lecture XII.; by James, *Principles of Psychology*, Vol. I., Chap. V.; by McDougall, *Body and Mind*, Chaps. VII.-XV.; by H. R. Marshall, *Consciousness*, 1909. The last mentioned volume well illustrates the position as it is formulated and developed as a current *philosophy*, but as a philosophy, also, that almost completely ignores really basic problems.

nihil fit, nihil ad nihilum fieri, the scholastics put it. But conscious processes are *facts.* They appear and disappear in the individual, and they certainly appeared in the evolution of living beings.

By *all three premises together,* now, the conclusion is implied, that *each conscious process comes from a preceding consciousness,* each *quantum* of consciousness *from a preceding quantum;* in other words, that there is a *conservation of consciousness* quite analogous to the conservation of physical energy. And just as all physical energy is in a process of universal evolution, cosmic and biological, so also has all evolution *another aspect,* namely, *the conscious aspect.* Living organisms arose from *so-called* non-living complexes of energies and forces, but in reality not only were these earliest living forms conscious, but so also were *their components and predecessors.* Physiological processes of the nervous system, especially of the brain, *seem* to be the condition for conscious processes. Really, however, the latter are only *parallel* to the former. The constituents of the nervous system change and are replaced by others in processes of repair. Therefore these replacing constituents must have their "conscious side" also. In general, then, wherever there is matter or physical energy, *there,* also, is *conscious energy.* Every cell, every molecule, every atom and electron is not only physical, but also conscious. The whole universe is double and twofold. It is physical, and it is conscious. There are *two energies, two conservations,* and *two evolutions.* Neither energy acts causally on the other, for such action would violate (1) the postulate, derived from introspection, that each is fundamentally different from the other, and (2) that only physical energy can produce and affect, and be produced and affected by, physical energy. Accordingly, by these postulates, *only like can act on like,* only like produce or be transformed into like,—physical into physical, conscious into conscious—but *no* interaction between consciousness and physical energy is logically possible.

This position has, in its general form, occupied a prominent place in modern philosophy from the time of Descartes to the present, but especially during the last thirty or forty years,—the period of the development of experimental psychology—

when it has received much discussion under the name of Psycho-physical Parallelism.

Modern psychology with its use of experiment, and of observation of others as well as of introspection, is emphatic in its claim to be a natural and empirical science, so that this more definite Naturalism has appealed to it. For Psycho-physical Parallelism accepts the facts and results of the physical natural sciences at their face value, adding to these the detailed facts of and about consciousness. These, too, are held to be "natural" and to form the peculiar subject-matter of psychology. Modern psychology, therefore, by adopting Parallelism, seems to justify its claim to be a science that is on a *par* with the physical sciences, and that at the same time fits into a definite and consistent philosophical position.

The main characteristics of this position clearly form a solution to the *ontological* problem. For Parallelism, there are two kinds of energy,—two kinds of "something" that is in each case conserved. In its solution of the other philosophical problems the position follows closely the main outlines of Naturalism. Thus its cosmology and its doctrine of values are those of the *sum total* of the physical sciences, including biology. The position is, therefore, definitely *evolutionistic.* Every physical object, indeed every part of every physical object, has, however, a conscious side or aspect. This feature of the position is sometimes taken advantage of, however, to introduce a definite *purposefulness* into all "things," and so *into the whole course of a universal evolution.* Thus, to do this, one has only dogmatically to insist, that the fundamental kind of consciousness in all "things" is Will, in order subsequently to deduce a foresight, a planning, a choosing, and an adapting of means to ends in *all* "things."

It is clear, however, if one *thus* introduces a *teleology, either* that the physical side of the universe does *not* pursue *the same course* as it would pursue, *if* consciousness were *not* present, but that it is *influenced* by the "conscious side," *contrary* to the fundamental postulates of the position; *or,* that physical occurrences *do* take place just *as they would if no conscious side were present.* But in this second case the "conscious side" becomes quite superfluous, since, *without consciousness,* there would be exactly the same course of events, past, present, and future, as there would be *with* it. This would also be the case if the "material side" were absent. Two lines parallel to each other and pointing in a certain direction indicate that direction no better than does one. The duplication is quite superfluous. In quite a similar manner, if the universe were *double* in every detail, and *if* all its events, both as a whole and as individuals, have a certain direction, then, whether this direction be interpreted to mean purpose or its lack, it would still be the same direction, were *either one* of the two "sides" done away with, or were either absent.

This is a severe criticism of Parallelism. For it means that the position, by endeavoring to introduce a teleology through its "double energy" theory, either *violates* its own foundation by introducing *interaction*, *or* accepts *one energy that is superfluous*. This may be *either* physical energy *or* consciousness. But the universe does not need both, if each parallels the other in that way which is alone consistent with the foundations of the parallelistic position.

From this criticism it is evident that in its *epistemology* Parallelism avoids that very damaging inconsistency of which Materialism is guilty in respect to the relation between the knowing process and the object known. Materialism *should* admit that these *interact* and so affect each other even as do other physical processes and objects, but, *inconsistently*, it does not admit this for any kind of knowing of any kind of object. Parallelism, however, by its doctrine of the *total absence of interaction* between any kind of knowing process and the physical world, is not guilty of this inconsistency. At most, between the physical and the mental there is a relation that can be interpreted only as *external*. For each minutest difference in the one realm there is a corresponding difference in the other, and yet each would be the same *without* as *with* the other. Certain difficulties, however, arise in connection with this doctrine when it is applied. For example, it may be asked, *What are the specific correlates* of those conscious processes of which there is *introspective knowledge?* Are not these correlates specific *brain processes?* But, in that case, *is it not these processes that are known,* and *not* outside objects? Yet, have not "*outside* objects" their correlative conscious processes also? But into these difficulties we need not go, since they are *artificial,* arising only as *consequences* of a position that itself does not stand the test of criticism.

IV. PSYCHISM;[5] CRITICISM OF NATURALISTIC THEORIES

That a specific type of Psychism develops out of Naturalism is quite evident from the preceding discussion. *Subjectivism,* with its doctrine that all so-called physical "things" are but the collection of the percepts and ideas of individual spirits, is one kind of Psychism, but it is one that retains the finite ego or soul as a simple, indivisible *substance,* with God as an infinite spirit. The Psychism that is derivable out of Naturalism, however, recognizes no irreducible and ultimate egos, souls, spirits, or personalities, and only that kind of a God who is the *sum total* of that consciousness, or conscious energy, which *is all,* and *which all ultimately is.* This modern Psychism maintains, as its chief tenet, that *ultimate reality is consciousness,* or conscious energy.

The possibility of this doctrine has already been indicated in discussing Parallelism. *If* there are two substances or energies in all "things," side by side in the evolution of the universe, it is implied, *that the course of events would be quite the same, were either energy non-existent.* With psychical energy absent, all would be matter; were there no matter, then would only conscious energy exist.

To develop such a possible position, let us assume that *only conscious energy exists,* and then raise the question, How shall what *seem* to be *physical* "things" be accounted for? The answer given to this question is ingenious, though not convincing, while it also meets with many difficulties when it is applied to specific problems. The answer is, that the difference between the (so-called) *physical* and the conscious is only one of *point of view,* or of approach. Thus the *appearance* of one consciousness to another, say, of *yours* to *mine,* is held to be *the physical,* while a consciousness that *appears to itself* is *the mental.* Accordingly, *you* can know *me* only as a *physical* body, but *I know myself as conscious.* One and the same entity, *e.g.*, *my* consciousness is, then, approached in two ways: *known* by you, it appears, or *is* physical; known by myself it *is* psychical.

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[5] This position is developed in C. A. Strong's *Why the Mind has a Body,* 1903; Malebranche (1638-1715) was an earlier psychist of this type.

This theory of a *universal psychism*,—of one psychical substance or energy, *of which specific instances are individuals*, or human personalities, welling-up like the crests of waves upon the deeper fundament of continuity,—is certainly plausible, and, perhaps, inspiring. But it is open to the same criticism as Materialism. Thus, if, as Materialism contends, *consciousness* is matter or energy, and, therefore, *is not* what it seems to introspection to be, the question may be asked in criticism, whether there is not a form of matter or of energy that *does* what consciousness is *found empirically to do.* Likewise, as concerns Psychism, with its position that physical "things" are ultimately not what they seem, but are really consciousness, it may be asked, whether *there is not a form of consciousness that does what physical "things" do,* and whether there is not *as much difference* between this kind and other kinds of consciousness, *as there is between what in common sense and science are distinguished as the physical and the conscious?* The *difference* that is introduced by "proving" in some way, either that what appears to be mental is really physical, or that what appears to be physical is really conscious, *is only one of name,* provided the character and *behavior* of "things" is ascertained empirically and not artificially by an *a priori* argument. On the other hand, if, by "making" the apparently physical really psychical in character, something is introduced into the physical world that is in conflict with empirically ascertained physical principles, then one can no longer maintain *the major premise* of Psychism, that the detailed results of empirical investigation are to be accepted at their face value, and that the apparently fundamental difference between the physical and the psychical is due only to a difference in the point of view.

An analogous criticism can be made of Materialism. If by "proving" and calling consciousness a kind of *matter or energy, no specific difference* is introduced into the *details* of conscious behavior and action, then nothing is gained, since nothing is done by matter that is not done by consciousness, and conversely. On the other hand, *if a specific difference is* thus introduced, then it should be a difference that can be confirmed empirically, and then there is the possibility of discovering a conflict between this new specific, "difference-making" element and other *empirically* ascertainable differences, so that consciousness can no longer be regarded as something that is to be *studied* only by *a priori* methods, and not *empirically, as regards its details.*

This criticism is much the same as that made of Parallelism, namely, that, if *the physical* and *the psychical* are two energies that are quite parallel and in a one-one correspondence in every detail, then with reference to what "things" *do,* this doubleness is quite superfluous. One or the other energy is a mere epi-phenomenon. Do away with either, and the course of all events would be the same. On the other hand, if the doubleness does make a difference, it can do so provided only one energy influences the other. But this means to give up Parallelism and to accept Interactionism.

The fact is, however, that the three positions under discussion are the products of the influence of the old Aristotelian logic and philosophy, and represent the effect of the continued domination of the concept of *substance.* That logic, we have found, is a logic of *things,*—of attributes that inhere in an underlying substratum. Also, it is a logic that is interested in what "things" are, rather than in what they *do.* Accordingly, it is a logic that is *metaphysical* in that derogatory meaning of the term which is sometimes so extended by certain scientists as to include *all* metaphysics and philosophy. This meaning is derived to a large extent from that mediæval science and philosophy which sought to ascertain the *essence* rather than the behavior of "things." The effects which "things" had, were explained by their *essence.* For example, opium was held to produce sleep, because it was a *soporific substance.* Certain bodies fell, because they were *essentially ponderable;* others rose, because they were *essentially buoyant.* Indeed, as late as the eighteenth century, heat was held to be *caloric substance.* The general result was, in all lines of so-called scientific investigation, that that which was sought for, was *the recondite substratum,* or essence of "things," even though this was "found" in some instances *by a circular definition.*

Modern logic and scientific method are characterized by a strong reaction against this entire *"substance point of view."* It is to be granted, of course, that in certain sciences, notably in chemistry, search is made to find what "things" *are,* with the result that a number of different elements and a great many different compounds are discovered. But even in this case, what these elements and compounds *are,* is largely identical with what they *do.* Thus hydrogen is that substance which *acts* in such a way on oxygen as to *produce* water and other compounds; it is also that substance which, under certain conditions, *exerts* a certain definite pressure. So, also, certain modern mathematical equations that describe electricity show what electricity *does,* rather than what it *is.* These examples illustrate in general the point of view, and the results of modern science. *In science* little remains of the *substance* concept.

In philosophy, however, the influence of the concept of *substance* still persists. Indeed, most philosophical systems are derived through the postulation and use of this concept in one way or another. Phenomenalism and Subjectivism are two such systems, and now there appear also Naturalism, Materialism, Parallelism, and Psychism as systems with a similar foundation. Each of these asks, and answers the question, *e.g.,* What kind of a *thing* or *substance* is *the universe?* Each is content to accept *the detailed results of the natural sciences* in answer to the other question, What things do? but is not so content with regard to this "larger" question. All four positions make the universe, both as a whole and a part, *evolve,* but they differ as to what *kind* of a "thing" an evolving universe is. Naturalism "makes" one *part* of it physical energy, but remains non-committal in regard to the other part. Materialism "makes" *the whole* a purely *physical* complex or "thing," while Psychism "makes" *the whole* ultimately *conscious* in character, a sort of *psychical thing,* a huge world-soul, sometimes identifying this with God. Both of these last two positions are *monistic* ontologies, since ultimately, for them, there is only one kind of *substance,* broken up though this may be into many *parts.* On the other hand, Parallelism makes the universe twofold. It is dualistic. This dualism is overcome, and the equal *status* of both the physical and the psychical is kept, only by maintaining, in further accordance with the concept of *thing,* that both are but aspects or attributes of *one universal substratum, which is substance par excellence.* This is Spinoza's (1632-77) doctrine, which was revived, with certain modifications, in nineteenth century German Idealism, or Transcendentalism.

Finally, in closing this discussion, we may point out that the four philosophies under consideration are each completely realistic as regards that epistemology which is tacitly accepted by each in advancing a specific doctrine as true. Not one of them *denies* that it is possible for "things" to be known as they really are. Not one of them is either founded on or itself develops the position, that knowing affects, alters, or constitutes its object. Accordingly, not one of them is either *phenomenalistic or subjectivistic as regards itself.* Yet, as we have seen, Materialism *should be* phenomenalistic, in order to be consistent with its doctrine of a *universal interaction* of all "things," but it does *not* explicitly recognize this characteristic. Psychism also should recognize itself as phenomenalistic, since, although for it all "things" are psychical in nature, it contends that there is a *modification* of psychical "things," so that they *appear* to be physical under certain conditions. But Psychism, like Materialism, does *not* develop this phenomenalism. Parallelism alone, in its doctrine of the *absence of interaction* between the physical and the psychical, and of the presence of only an external relation between these in regard to their *correlation* and *correspondence,* is *consistent* with the presupposition which it itself makes in regard to the knowing of that *state of affairs which, described by Parallelism, is* the *object* known. But Parallelism is also a position that presents a worthless and functionless *duplication* of the universe.

All these theories, then, if we omit their inconsistencies, are not opposed to Realism in their fundamental epistemology. Realism would be *compatible* with Psychism, with Materialism, or with any other ontology, *provided* these positions could be established empirically, and provided they could at the same time *give up* the doctrine of *universal causal interaction* so far, at least, as to make *an exception* for the relation between knowing and the object known. For it is *only* on this last condition that any of these theories can be true, or that the *complex objects* described in any of them can be genuinely known. Finally, it is provided only that this condition is recognized and observed, that any of these theories can, in its details, be *consistent* with *its own presuppositions.* However, it is by virtue of the contradiction between their own presuppositions *and* their explicit doctrines, that Materialism and Psychism are *self-refuting,* and may, therefore, be dismissed from further serious consideration.

CHAPTER XXXIII

PRAGMATISM

Pragmatism is that more specific development of generic Naturalism which endeavors to avoid some of the errors and inconsistencies that are implied in detailed Naturalism, Materialism, Parallelism and Psychism. The name has been characterized by William James as a *new* name for *an old way of thinking.* The justification for this characterization lies, among other things, in the endeavor of the pragmatist to glean the grain from the chaff in the methods and results of modern scientific knowledge. In other words, Pragmatism is that generalization, in regard to the epistemological problem, which results from endeavoring to distinguish *what is essential* to genuine knowing from what is artificial and superfluous. As a result of this endeavor, Pragmatism is made up of a number of doctrines, which may be advantageously examined under *three* headings, namely, *Pragmatism's Anti-substance doctrine, Pragmatism's Anti-intellectualism,* and *Pragmatism's Evolutionism.*

I. PRAGMATISM'S ANTI-SUBSTANCE DOCTRINE

Pragmatism's anti-substance doctrine is a *protest against the domination of the traditional substance concept.*[1] In making this protest, Pragmatism aligns itself with Positivism.[2] Not what "things" *are*, but *what happens, what is done, what works*, is regarded as the important question; not essences, but acts and occurrences, should be the aim of scientific discovery. Pragmatism thus senses the true tendency of modern scientific research. It replaces *a statical* with a dynamical point of view, and aims, with Positivism, to discover *what specific relationships* hold between terms, rather than to find their substance-like character or essence. It thus conforms to the method of much of modern exact science in which laws are expressed by equations that symbolize relationships between variables and other complex terms.[3]

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[1] See, *e.g.*, James, *Pragmatism*, p. 85 ff., and p. 184 f.
[2] See Chaps. XXXI.-XXXII.

II. PRAGMATISM'S ANTI-INTELLECTUALISM

A second constituent doctrine of Pragmatism is its *anti-intellectualism*,—a doctrine that in turn has *three* phases. The *first* of these is determined by the reaction against that specific type of intellectualism which preceded the Renaissance and modern scientific development, and which attempted to solve problems by an appeal to tradition, to authority, and to argumentation, rather than to nature, experiment, and observation. This intellectualism was largely identical with the use of the traditional Aristotelian *substance*-logic, and with the resulting, perpetual endeavor to find the *essences of "things."* A philosophy that is directed against such an intellectualism is quite justified, as the development of science itself shows. But this does not warrant a *universal anti-intellectualism*, to the effect, that intellect and reason can in *no* instance reveal fact and deliver truth.

A *second* feature of Pragmatism's anti-intellectualism is the result of *generalizing the rather limited procedure of the experimental and natural sciences.*[4] The method of these sciences is (a) to observe, sometimes unaided, but more frequently by means of experiment and measurement; (b) to generalize from typical cases, and to form hypotheses, subsequently to test these and deductions from them by an appeal to observable fact; (c) to ascertain what *terms* cannot be *removed* without "disturbing" others, and also what terms cannot be varied without varying others, thus to discover relations of *dependence* as well as of independence; (d) to discover, by measurement and otherwise, what specific functional relations hold good between terms; and finally (e) upon the basis both of generalizations as to the presence and action of causes, and of the discovery of functional relations, to predict and construct the specific instance, then to await its confirmation by sense experience.

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[3] See Poincaré, *Foundations of Science.*

[4] See, *e.g.*, James, *Pragmatism*, Chap. VI., and the whole of *The Meaning of Truth.* I should say that this is a position in which all the pragmatists agree, although some emphasize more than does James the purposefulness and the intention, and the functional and adaptative character of that which issues in the concrete, verifying experience.

Now the intellect plays a prominent part in all this procedure in forming hypotheses to guide observations, experimentation and measurement, in making generalizations and deductions, and in forming systems by the interweaving of many generalizations. But if, through such intellectual methods, there are not formed generalizations, hypotheses, and systems that lead to direct confirmation by the sense experience of concrete fact, then, Pragmatism holds, so much the worse for intellect. For sense experience is, in the natural sciences at least, regarded as the ultimate test as to what is fact and knowledge. And it is by rigidly adhering to this test that science has won that insight into nature's processes and secrets, which so conspicuously distinguishes modern knowledge from mediæval and ancient belief and surmise.

This feature of the subservience of intellect to sense, of reason to concrete experience, Pragmatism generalizes into a *universal,* though *definite anti-intellectualism,* and into a *definition of truth.* However, this anti-intellectualism does not take the extreme form, that intellect plays *no* reliable part in revealing fact and in delivering truth, but that it can perform this function provided only that it coöperates with and is *checked up* by sense experience. Intellect is thus made, not coequal with, but subordinate to, sense experience. For example, should such concrete things as *points* be dealt with by intellect, not as individuals, but as classes,—which is the only way they can be dealt with,—then, since we are unable to see, touch, or in any way *sense* a geometric point, Pragmatism doubts the reality of these entities, and characterizes them as being only inventions of intellect for the *practical purpose* of dealing with space.

The peculiar definition of *truth* which Pragmatism thus derives, by generalizing from its review of the natural sciences, is, that truth is confirmation by concrete fact, or experience.[5] No longer, however,—in this generalization—are the facts of sense experience alone insisted upon, but, rather, any concrete facts, as these are experienced *after the manner* of the sense experience of *this* particular "thing," or *that*. The development of implications by reasoning, the observation of the demand for consistency and freedom from contradiction, and the like, are all very well, provided they lead to the experience, in some way, of a concrete, particular *something*. But methods, theories, and hypotheses that do not have such alternate practical outcomes are left hanging in mid-air, as neither true nor false.

The result is, that intellect is displaced from any position of equality with other "revealers" of fact and of truth. For intellect seems to be able to deal only with classes and types, while such experiences as sense perception and emotion reveal the singular particular "individual." Intellect can deal with individuals only *conceptually*, or by the method of *intension*, namely, with *any* individual of a *class* or *type* defined in a certain way. But sensation and emotion reveal a *this* or a *that*, a *here* or a *there*, a *now* or a *then*. Pragmatism, accordingly, in that definition of truth which is under discussion, accepts emotional experience and feeling as well as sensation as "revealers" of those particular facts or workings which constitute the truth of ideas.

The further result is, that Pragmatism becomes in its anti-intellectualism a mixture of *sensationalism*, *emotionalism*, and *immediatism*.[6] Let an idea or belief, *e.g.*, the belief in immortality, lead to a definite *emotional* satisfaction, thus working successfully, and then, *by definition*, that idea is true. It follows, *e.g.*, that different religions, various philosophies, different systems of ethics and of æsthetics, and the like, are all equally true just so long and as frequently as a specific and satisfactory emotional result to some one is their outcome. For—for Pragmatism—the *outcome* makes the truth, or *is* the truth—and not the *mere test*. Pragmatism, therefore, does not hold the absolutistic position, that there is only *one* truth, or one system of truths, but, for it, there are *many* truths, and many systems,—as many, in fact, as in some instances there are individuals.[7] For, so far as in many individuals satisfactory workings result that do not conflict, although they may differ, to that same extent are there many *individual truths*. It is thus that, in its anti-intellectualism and emotionalism, Pragmatism becomes distinctly *individualistic*.

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[5] James, *Pragmatism*, Chap. VI.

[6] Especially in James and Bergson.

But Pragmatism is also *immediatism*. For example, not points, not lines, not volumes, but *space* as this is perceived directly and without any definite outlines, is regarded as the reality; the parts, such as points, cannot be sensed, and therefore are held to be only inventions of the intellect that serve the practical purpose of dealing with the *intuited whole*, space. But perhaps not even space, as thus intuited, is the reality. For it is sensed, *not* as pure space, but as a space with "things" in it, here and there, and moving,—in time. *This* whole, then, may be the reality, a world of vaguely continuous and mutually interpenetrating "things" and qualities, happenings, and relations,—matter, energy, time, space, ideas, volitions, feelings! Perception directly distinguishes some of these from others, for even to it certain lines of separation are evident. But these lines are not so sharp as *intellect* in its analysis would find them. Rather, all "things" are much more alike than science and intellect would admit them to be. They are even so alike as to be *continuous*. Even human personality, the human self, the knower, may not be different from other "things," but may be one with them, so that, as thus united, *a whole of self and not-self* may be experienced in great throbs of emotion and ecstasy.

Thus it is, that Pragmatism, as founded on a generalization from natural science, and as developing on this basis an anti-intellectualism and immediatism, becomes in its extreme form *anti-scientific, anti-analytical*, and, in a very positive manner, *mystical*.[8] But, thus transformed, for it, *all truth* is lost; *there is only fact*, and, at that, only one great fact or experience, which deserves not even this name, since it is the work of intellect.

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[7] James, *Pragmatism*, p. 78.

[8] In Bergson, especially in *Creative Evolution*.

The *third* feature of Pragmatism's *anti-intellectualism* is derived by a dialectical and analytical attack on the intellectualistic method in general and the analysis with which this method is identical.[9] The means of logically establishing this aspect of Pragmatism is radically different from that which is used in behalf of the anti-intellectualism just considered.

First,—such is the irony—the *intellectualistic* assumption is made, *tacitly,* and not explicitly, that *only that which is free from contradiction can be fact, and can be true.*[10] Secondly, it is *assumed,* also tacitly, that *to intellectualize, rationalize, and analyze* is identical with using the old Aristotelian logic[11] with its acceptance of the law of *identity* as the chief logical principle, with its subjection to the concepts of *substance* and *thing* as the universal type-phenomena, with the *additive relation* as holding exclusively for the composition of parts into wholes, and with the modification theory of relations as applying to *all relations* between terms. Finally, to support this second assumption, this anti-intellectualism draws upon the results of the natural sciences, especially upon the theory of evolution, although[12] it ignores that real logic which both underlies much of modern science, and also is so radically different from the traditional Aristotelian doctrine.[13] Accordingly, the method of *rationalizing* is, in both its analytical and synthetical aspects, *implicitly and arbitrarily limited to and identified with the use of the principles of the latter doctrine.*

However, as regards such a procedure, it is clear that no attempt to invalidate reason as such gains its point unless *all* of reason's aspects and *methods* are considered; and that to identify *rationalization* with one specific procedure, and then on this basis to derive an anti-intellectualism, is an attempt to invalidate reason which *fails, if* there are alternative methods for reason to pursue. But one such alternative, in the case under consideration, reason has at its command in the principles of the new logic.

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[9] Especially Bergson in *Time and Free Will* and *Creative Evolution;* cf. in the present volume, Chaps. III.; XXI.-XXV.; XXVI., II., 2; XL., VII.; XLIII., VII.-XI.

[10] Bergson's major assumption.

[11] This is shown by penetrating beneath the superficial plausibility of Bergson's arguments.

[12] Bergson, *Creative Evolution.*

[13] Cf. Chaps. XXI.-XXV.

Reasoning was identified with, and limited to, the use of certain logical methods by Aristotle. It was still more intimately identified with and limited to these methods in mediæval and scholastic times, as it is even yet in the minds and teachings of many philosophers, in the writings of many logicians, and even in the opinions, though not in the thinking and procedure of many scientists of the present day. But this identification and limitation need not be made. Indeed they cannot be, provided one takes, as one must take, the same position toward logic that is maintained toward other branches of investigation, namely, the position, that *advance and new discovery is possible.*

Nevertheless, by first inconsistently ignoring this justified, empirical, and *pragmatic* demand, and then by identifying reason with the use of only the one method, Pragmatism seems to emerge victorious in its propaganda against intellect. Such a fallacious and yet plausible procedure is, however, not difficult! To illustrate such a procedure, let us make the two assumptions previously stated, especially the assumption, that parts are related *additively* to form a whole, and then attempt *on such a basis* to make a valid analysis of space.[14] Now, according to orthodox geometrical science, space is made up of points that are *unextended.* But such points are the *contradictory* of extension. Then analysis here leads to the contradictory of the "thing" analyzed, while the inverse process of *synthesis* cannot derive extension from the unextended (since it is assumed *that points can be "put together,"* or are related *only additively*). Accordingly the dilemma results: Either the immediate experience or intuition of space *as a whole* is reliable, or *the analysis into points* is. *Choose* either alternative and the other must be rejected as false. The older intellectualism chose the second alternative. Pragmatism in its anti-intellectualism chooses the first.

Quite similarly Pragmatism contends that *the analysis of motion leads to rests,* so that, inversely, *synthesis* "makes" motion consist of the sum of its *contradictories*. Accordingly, motion is chosen as the "real thing," and the *rests* are regarded as only an invention of intellect that serves the purpose, perhaps, of prediction, and the like.

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[14] Cf. Chaps. XXII.-XXIV., and XLIII.

This argument is generalized, since motion is regarded as *typical of all change.*[15] The sciences are then drawn upon to show that *all is change and evolution*, as typified by motion. Accordingly the conclusion is reached that, since *change and evolution* cannot be analyzed without the introduction of contradictions, they must be taken at their face value.[16] Thus to the Mysticism that is derived from Immediatism there is now added that Evolutionism which is derived from the acceptance of the results of the natural, especially the biological sciences, and from a *specious* argument against intellect.

The argument is specious, because those *analytical and synthetical* results which are accepted as the outcome of *intellectualizing*, are, as a matter of fact, *not* those which *modern science really obtains.*[17] Accordingly, if one but accept the alternative, which is ready at hand, of identifying reasoning with the method of obtaining these genuine scientific results, it will be seen, that the whole argument against intellect falls to the ground, and that the supposed *contradiction between* the immediately given "thing" and the entities revealed by analysis entirely disappears.

One can, therefore, accept *both whole and part* as equally real, especially if that which is given directly as a whole, *e.g.*, motion, stands the test, *by correct methods*, both of *analysis* into parts and of *synthesis* into a rational whole. Indeed it is clear, that, if *rational methods* are used in order to attack reason, the validity of at least *some* rational methods is presupposed and accepted. But the further *correct* use of these same methods limits Immediatism, and shows that *not all* "things" *are exclusively and completely as they are directly experienced.*

This is made clear by examining that *correct* intellectual analysis of motion which began with the experimental work of

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[15] This is why Bergson selects motion and its analysis for examination in the first chapters of *Creative Evolution* and in *Time and Free Will.*

[16] Bergson, *Creative Evolution.*

[17] Cf. Chap. XLIII., and the writer's "Defense of Analysis" in *The New Realism.*

Galileo, and which was completed by Newton's application of the Calculus to all cases of motion. The details of this analysis constitute the science of Mechanics. This science, in turn, falls within the *new* rather than within the old logic.

This modern analysis of motion shows, that that *state of affairs* which holds at each instant of the motion of a body is *neither rest nor motion.* Rest is the occupation of a point for at least two, and therefore for an infinite number of instants. Then that *complex* which is constituted by the *correlation of one specific point with one specific instant,* in the case of a body moving along a specific path in a definite time, *is not rest.* But, also, *it is not motion,* for *motion is the series of such complexes.* Motion, therefore, is a whole that consists of *two kinds of parts,* the one, *smaller motions,* the other, *relational complexes* ("elements" as regards motion) *that are neither rests nor motions.* These "elements" are *complexes* in that each is composed of a *point correlated with an instant.*[18]

Pragmatism's anti-intellectualistic attack on the analysis of motion is, therefore, invalid. For correct modern analysis shows that motion is not made up of its contradictories, *rests,* but of *parts* which are *neither like the whole, nor as unlike* it as are *rests.* Quite similarly, in the modern rationalization of motion and of that *of which motion is typical,* namely, change in general, the *synthesis* of wholes out of parts is *not* that which the attack on intellect would have it. Clearly, *if rests were the "elements"* of motion, and the rests could form a whole only by being related *additively,* then *only a whole that is like the parts* could be obtained from the parts. For the *addition of parts gives only wholes that are like the parts.* Dollars related *additively* give a *sum* of dollars, and not a cash book. For, the *order* of "things" makes no difference to addition. $2 + 3 = 3 + 2$, or, more generally, $a + b = b + a$. This is called the *commutative law of addition.* Accordingly, if the "elements" of motion were related additively, then, *e.g.,* in the case of a falling body, the *order* of the varying velocities at different instants would make no difference. *In any order,* they would be *a whole accelerated motion.* But the *scientific* fact is, that there is *a very definite order* among these velocities by virtue of which they form *a uniformly accelerated motion.* At every instant there is a different velocity, and between any two velocities there is an infinite number of others, with some of these velocities in *correlation* with rational numbers, and others in correlation with irrational numbers, but *all in a very definite order, namely, that of magnitude.*

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[18] Cf. Chap. XLIII., x.

The relation between velocities whereby they form accelerated motion, is, therefore, *not additive,* but a relation that generates or determines *an order* which is fixed, irreversible, and non-commutative. It is an *order* that has the same logical characteristics as has the order of the instants of time, or as have the positive integers in order of magnitude. It is clear, therefore, as concerns the *character of wholes* in contrast with that of their parts, that a whole which is made up of parts related *additively* can only be *similar* in character to these parts, but that *if a non-additive relation holds between the parts, a whole unlike the parts results.*

This last principle is the secret that underlies both the experimental and the intellectual synthesis of modern science.[19] For example, genuine synthesis in the case of all chemical elements, compounds, and "radicals," brings about new characteristics in the resulting wholes, as is shown by the fact that hydrogen and oxygen thus form water, and that carbon, hydrogen, nitrogen, oxygen, sulphur, magnesium, and some other elements thus form that chemical and physical whole, protoplasm, which is found in all living cells.

In accordance with quite the same principle, motion is "generated" by non-additive relations between "elements" that are neither motions nor rests; space, by non-additive relations between points that are neither extended, nor, strictly speaking, unextended; and time, by non-additive relations between instants that are neither durations nor their contradictory. Indeed, it is in accordance with this principle of *non-additive synthesis* that all those wholes are formed which are treated in the application of the calculus as *integrals.* In fact, were all wholes *only additive,* then would the method and the logical doctrines of the calculus not form a science at all. Additive synthesis alone would suffice. But were all wholes only additively composed, then would everything be only a *mixture*, and there would be "nothing new under the sun."[20]

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[19] Cf. Chap. XLIII., IV.-VI.

III. PRAGMATISM'S EVOLUTIONISM

We now reach the third main constituent doctrine of Pragmatism. If Positivism with its reaction against the *substance* concept is the first constituent of this philosophy, and *anti-intellectualism*, in its three aspects, is the second, then *evolutionism* is the *third* component of the pragmatic mixture.

The acceptance of the general doctrine of the modern scientific concept of evolution together with other scientific results and theories as the foundation on which to develop *a philosophical position* is again witness to the close allegiance between Pragmatism and Naturalism. Naturalism in its earliest days, as found, *e.g.*, in the works of J. S. Mill and Herbert Spencer, was evolutionistic. But this Naturalism also gave its allegiance to the *substance* concept as this developed into some one of the three doctrines of Materialism, Parallelism, and Psychism. In Pragmatism, however, as has been already shown, the substance concept is dropped, but *evolution* remains,—to play a most important, if not a dominant rôle. As a result, sometimes, as in the anti-intellectualism just discussed, Evolutionism emerges as the grand peroration of the pragmatist, but in a form no longer recognizable as the sober theory of the scientist. Rather it becomes, as, *e.g.*, with Bergson, the mystical doctrine of an *all-inclusive flux*, with even the knowing process absorbed in this, and with intellect and reason only crystallizing out here and there to serve purely practical purposes, but not to reveal fact. Sometimes, however, *evolutionism* appears in fairly definite and accurate form as the very basis of Pragmatism. This is the Pragmatism that is advanced by such American writers as Dewey and James, and, among English philosophers, by Schiller.

That which specifically characterizes the position of these evolutionists, is, that with them, as with the anti-intellectualists, the problem of prime interest is the epistemological problem, and, secondly, that the solution which is given to this problem is derived from a very specific *cosmology* that is accepted and *postulated* as a broad generalization from the natural sciences, namely, *the cosmology of a universal evolution*. However, the Pragmatism of these writers is not completely anti-intellectualistic, although it is explicitly *anti* any *a priori* philosophy, such as the Kantian, that lays claim to the possibility of arriving at knowledge by pure deduction from "truths of the reason." In this sense it is radical Empiricism.

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[20] Cf. with this examination of Bergson, James, *A Pluralistic Universe*, Chaps. VI. and VII.

This evolutionistic Pragmatism aims to demonstrate that intellect, reason, perception, memory, emotion, will, and the psychic processes generally, have all evolved in correlation with nervous systems and sense organs, and a general complexity of structure, and the like, in biological evolution. Accordingly, all these "entities" have only a *relative* and not an absolute function. Indeed it is conceivable that, had the environment been different, something quite different from intellect, perception, and the rest of the mental processes, or at least something different by way of *specific* rational principles and *specific modes* of perception, should have evolved. That which has *de facto* developed and now persists, enjoys this good fortune only because it is an adaptation and *serves the organism some definite purpose* either directly, or indirectly by correlation with some directly useful organ or function.[21]

The general cosmological position upon which this theory is founded is, as has just been stated, that everything, or that *almost everything* evolves. With this the case, it may be admitted, perhaps, that the laws of evolution are themselves *exceptions* to evolution, although the knowledge of them is not. Such an admission, however, proves to be extremely dangerous to the theory. Nevertheless, under the influence of those natural sciences which do find the principle of evolution valid for many "things," such as chemical elements, planets, stars, continents, seas, mountains, plants and animals, races and nations, language and religion, it is not surprising that the hypothesis should be formed, that perception, reason, truth, æsthetic standards, and the like, should be added to the list.

A critical review of that pragmatism which is founded upon the general doctrine of an evolution of all "things" shows, however, that the theory is not based upon any one of the specific *biological* theories of evolution. The general principle of evolution is, perhaps, as old as Empedocles. It was accepted by Aristotle and developed by him into a definite and detailed philosophy—one of the most influential that human culture has enjoyed. In modern times the Hegelian philosophy also is distinctly a philosophy of evolution.[22] But it is due to Darwin's influence that the theory has become the capstone in the edifice of biological science, and that the general principle has been accepted and applied in one way or another in nearly every field of inquiry.[23] Lamarck came earlier than Darwin, but it was largely due to Darwin's specific theory of the origin of species that interest was aroused in Lamarck's teachings.

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[21] This is the pragmatism of James, Dewey, Baldwin, Schiller, Moore, Mead, Ames, Pratt, Boodin, Bawden, and many others.

Aristotle's philosophy of evolution and progressive development was primarily a theory of *universal change,* or of universal motion, although, as such, it was a philosophy that was inconsistent with his logic. Hegel developed a general doctrine of evolution that was *a direct consequence of the Aristotelian logic.* He showed that, by the Aristotelian logic, *any specific change* meant, that at some specific instant there *both is* and *is not* a certain quality. This is the only way that the change of *a* into *b, e.g.,* hard into soft, can be rationalized by the old logic. At a certain instant, then, something is, by this Hegelian doctrine, *both a and b, i.e., both a and non-a.* It is both itself and its *contradictory.* By showing further, now, that there is no entity for which the contradictory cannot, indeed, must not be thought, *i.e.,* which does not *imply* its contradictory, Hegel *identified change with logical necessity,* and showed that *change is, in every instance, logically implied and necessitated.*

The scientific and positivistic theories of evolution differ widely from these philosophical theories. Most of them are based largely upon empirical observation. Darwin's well-known theory is, that out of the wide range of variations of structure and of function presented by the individuals of any species, those individuals survive which present the variations that are the best adapted to the environment. The "sifting" by the environment is called natural selection. By means of this selection, as it takes place through successively appearing generations, a specific line of development is determined, and organs and functions are formed that are specific adaptations. As a corollary, the principle is laid down, that *only that which is useful will persist and develop,* and, conversely, that *that which persists and develops must be characterized by usefulness,—past, present, or future.*

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[22] Cf. Chaps. XXXV.-XXXVIII.

[23] See Dewey, *Influence of Darwin on Philosophy and other Essays;* cf. Perry, *Present Philosophical Tendencies* (an excellent analysis of Evolutionism in Chap. IX.), and Bawden, *Principles of Pragmatism,* Chaps. I.-V., VIII.

Lamarck's specific evolutionism is somewhat different. Lamarck held, that if an organism lacks a certain adaptation to its environment, it *"feels"* this *lack,* and also the *need* of overcoming it, and that, accordingly, in response to *this felt need,* the *effort* is made to overcome the lack. Thus, *e.g.,* a giraffe would stretch its neck for food, and a snake endeavor to squeeze through a small opening. Such efforts have their effect on the organism, which is thereby changed in an *advantageous direction.* Those organisms which thus *succeed* in adapting themselves to their environment survive and are the ones to reproduce their kind, and the next generation inherits the slight adaptations gained by its parents. Lamarck's doctrine thus accepts the principle of *the inheritance of acquired characters.*

The principle which appears as a corollary of this Lamarckian theory is, that *not only the useful persists, and that the persisting is useful,* but also that *whatever is useful and persists was felt by the organism to be a need before the adaptation appeared, and that it was even aimed at and purposed by the organism.* Darwinism does not accept this last doctrine, but finds it sufficient to posit in most cases a scheme of a *rigorous causal selection* from those variations in structure and function that the individuals of any species present. The inheritance of acquired characters is appealed to only in exceptional instances. Lamarckism therefore accepts original variations, but bases genuine advance in usefulness of structure and function upon "a felt lack and need," and *the changing accommodations* of the individual in response thereto. Clearly it thus allows for a very distinct *immanent teleology, i.e.,* for an inherent and somewhat mystical subconscious, or, perhaps, even conscious *purposing* faculty or process in every individual organism, possibly in every part of every organism.

Most of the contemporaneous scientific theories of evolution are the result of attempts to purify Darwinism and Lamarckism of their inconsistencies. Such attempts issue in Neo-Darwinism and Neo-Lamarckism. The one modern theory of note that is not of this character is the *mutation theory* of de Vries. Darwinism and Lamarckism are essentially theories of the origin of species, of functions, and of organs, by the *gradual accumulation,* through successive generations, of minute *favorable* differences and adaptations. This process is sometimes called *continuous,* although it is never this in the strictest sense of the term. The de Vriesian theory of *mutations* is, in contrast, that of the appearance of *sudden* and fairly large *definite differences* in the quantity or quality (one or both) of structure and function, of the individuals of one generation in contrast with those of the preceding generations. De Vries *observed* the production, by certain individual primroses, of new species of primrose in the next generation. The test applied was that the new species reproduces *true to type.* Others have observed similar mutations or saltations in several species of plants and animals. This theory is frequently called one of *discontinuous* origin as opposed to the two previous theories of *continuity. By it,* definite opportunity is left, however, for a *selection* by the environment, since only those *mutants* which possess favorable definite variations will survive and reproduce, thus to continue the species. Accordingly, there is no opportunity for the Lamarckian theory of *response to a felt need,* and the inheritance of the resulting acquired characteristics. Indeed de Vries asserts that no permanent new characters are ever formed in this way. The corollary of the de Vriesian theory is, therefore, similar to that corollary which is derived from the Darwinian theory, yet with the difference, that in some cases the appearance and persistence of characters does not mean their *usefulness.* Characters that are indifferent in this respect, or that are even harmful, may arise and persist for a time.

Pragmatism develops its *evolutionism* almost entirely by using either the Darwinian or the Lamarckian scheme. The de Vriesian theory is neglected, although it might furnish some interesting possibilities. However, that which Pragmatism emphasizes in these theories is the *corollaries* rather than the main principles. From the corollary, *that that which has developed and persists is, a fortiori, useful, or has been, or will be, useful,* the inference is drawn as regards the chief problem with which Pragmatism is concerned, that *consciousness in all of its specific forms, such as knowing, reasoning, the formation of hypotheses, theories, standards, ideals, and finally even the concept of truth itself, is merely an adaptation or a useful function and process.* Sometimes there is added to this conclusion the further *Lamarckian* principle, that all of these entities arise because of a felt lack and need in certain environmental circumstances, *and* also because of the ability of the organism to foresee, to purpose, to try this means and that, and finally to succeed in producing what is demanded. The entire cognitive function in all of its aspects is, accordingly, treated as a planning or purposing, with *ultimate success* as the only acceptable outcome.[24]

1. *Criticism; Truth and Falsity, for Pragmatism*

Of this main conclusion, however, the criticism is to be made, that, from the fact that a function or an organ has persisted and developed, it does not follow, that such a function or organ is *only* useful, and nothing more. Indeed, as an even more extreme position than this, it can be shown, that persistence and further development are not even universally applicable criteria for *usefulness,* since useless and, in some cases, positively injurious organs sometimes persist.[25] However, as against this criticism Pragmatism claims that everything must find its place in the general scheme of usefulness, even all that we usually call evil, false, and detrimental. For, if everything evolves, then have not alone the true, the good, and the beautiful, but also the false, the evil, and the ugly played their *useful* part, at least as a means to useful ends.[26] Indeed, if standards and ideals also evolve, and if the anti-intellectualistic and immediatistic contention is accepted, that the *outcome* is the sole test, then may not what some call evil be to others the good, the false at one period be the true at another, the beautiful to some be the ugly to others, and, conversely in each case?

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[24] This seems to me to be the type of pragmatism that is upheld by Dewey and his followers.

[25] Cf. V. L. Kellogg, *Darwinism Today.*

[26] That they have, is frankly admitted by the pragmatists.

Pragmatism answers all such questions with "yes," as, perhaps, it is bound to do by its major postulate that all "things" evolve. For, if everything evolves and changes, then, seemingly, nothing is permanent, there is no standard, all is relative, and anything may be a means to something else.

The result is, in that realm where the standard is usually referred to as *truth*, and where truth is identified by Pragmatism with *the satisfactory, the successful*, and, especially, *the* useful, *that everything is true and that there is no such thing as the false. Thus that very basis of difference by which truth might be distinguished from falsity is done away with*, and Pragmatism is not logically entitled to use either term. Therefore it cannot even claim *itself* to be *a true theory* as opposed to other theories as false. It can only maintain that it itself, like other theories, is *useful* in some way, or that it is *satisfactory to some philosophers* though not to others, or that it is *valuable as a means to the development of further philosophical theories as ends.*

The pragmatic or utilitarian interpretation of ethical and æsthetic standards is also open to this same interpretation. In reality, in order to have the distinction between the true and the false, the right and the wrong, good and evil, more than a merely verbal one, something more than persistence and usefulness must be recognized. Indeed, there is no other solution to this problem of error than the candid admission that to make a mistake is a possibility, often enough, indeed, an actuality, that is characteristic of each kind of human cognition.

The implications of this admission are, however, interesting. They are, that cognition is a *process*, or a *relation*, or a *group* of terms in specific relations, that, in any case, is *independent of that which is known*, and that sometimes corresponds to the reality known, revealing it as it is, and sometimes does not so correspond.[27] This implication is not compatible with that fundamental assumption which underlies the *evolutionism* of Pragmatism, namely, that *all things interact.*[28] For, if everything interacts, so that there are causally produced variations, "lacks" and "needs," and the strivings to remove and to meet these, and a causal *selection* of some effects and elimination of others, resulting in adaptations, then *there must be,* in some sense at least, *a universal correspondence between adaptation and the entity to which the adaptation is made.* For *every effect must correspond to its causes,* every cause to its effects, with the result that mistakes and errors, as absences of correspondence, cannot exist.

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[27] Chaps. XL., I. and V.; XLI., VII.-XI., also XVI.; also Chaps. XLIV. and XLV.

Pragmatism is thus prohibited, not only from accepting the implication of that definition of error which makes it identical with the *lack* of correspondence between the cognitive process and the "thing" known, but also from accepting *error* at all. And yet, it does maintain that *error* exists,—most notably in the instance of those systems that are *opposed* to Pragmatism.

The only condition on which such acceptance of error can be justified is, that there is some other than a *causal relation* between the knowing process and that which is known. But the implications of this condition are, on the one hand, those which correspond closely to the traditional definition of truth, namely, that it is of the nature of a correspondence between the knowing and the known, and, on the other hand, that knowing is a process, a relational complex (*e.g.,* a dimension), or a relation, that, in each case, is *independent* of that which is known. For only provided that there is *independence* in the situation can there *sometimes* be a *lack* of correspondence, or *error,* and *sometimes* its *presence,* or *truth.*

The necessity of this same hypothesis is to be recognized also in the instance of the *knowing* of such *non-existential* and non-causal entities as numbers, space, and time, and all *consistent possibilities.* Such entities *are,* but they do not *exist.* Therefore between them and *knowing* there cannot be a causal relation. Yet they are known! In general, therefore, we are forced to the conclusion, that, if the endeavor is made to account for the presence of that correspondence which subsists in the case of *genuine knowledge and truth,* we must grant that there is *some other than a causal relation* between the knowing process and the known entity.[29]

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[28] Found explicitly, *e.g.,* in James and Bergson. (See references to Chap. XXVI., II., 2.) This position of a universal interaction is derived, as we have seen, from the traditional Aristotelian logic of *things.* Pragmatism, therefore, in its *basic postulate of interaction and of a derivative universal usefulness and identification of this with truth, is the product of the continued influence of this Aristotelian tradition.*

But, of *other* relations than the causal there are many,—some of which we have already examined in detail. One of the most important of these non-causal relations is found in functional relationships, in which *two variables are related and yet are independent.* One variable is called independent, the other dependent, but this is not a causal dependence. It is, rather, only the *logical dependence* of the logically *subsequent* upon the logically *prior.* The relation between accelerated motion and time is a good illustration of such a relationship. Consciousness, or cognition, would seem, therefore, to be something closely similar to such a dependent variable, with the *known object* the independent variable. In the (genuine) knowing of existing "things" and processes, there would be, then, a *correspondence* between *the knowing* and *the known;* the latter would be *logically prior* to the former, the former *logically subsequent* to the latter. In other words, knowing implies something known, and would not exist as *this or that specific knowing,* did not something (to be known) exist or subsist; but the "thing" (known) does not imply the knowing, nor would it cease to *be,* should the knowing disappear.

This hypothesis as to the nature of knowing, of the relation between it and the entity known, and of truth and of error, satisfies many of the demands that are met with in analyzing these problems. Some of the further implications of this solution of these problems are as follows:—

I. In addition to the subsistence of a functional relation between the knowing and the known, other relations, such as those of similarity and dissimilarity, asymmetry, and the like, may also subsist. Such an asymmetrical relation always holds between the two variables in a functional relationship, and in all instances of logical priority. Also, if the object known *exists,* then are the knowing and the object *similar* in just this respect, namely, that they both *exist;* while, if the object does *not* exist, but subsists, then are the two *dissimilar,* in that the *knowing* is existential, and not merely subsistential.

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[29] Cf. the section on Realism.

II. Knowing is *not* a *substance* nor an essence, even as motion is not, but is a relational complex that existentially is a function of time. Thus the opportunity is given for escape from the trammels of the old logic and the concepts of *thing* and *substance,* and for the interpretation of the nature of knowing and perhaps of consciousness in general, by means of the concepts and principles of the new logic, especially by the concept of *relation.*

III. Specific instances of cognition, such as perception, memory, and reasoning, may arise under certain specific *conditions,* such as *specific causal and functional relationships of a nervous system and sense organs to the environment,* and yet these conditions need *not* be in the relation of *cause* to the knowing process. Yet between or among *existing* knowing processes themselves, there may be causal relations. This is analogous to the situation that subsists, *e.g.,* in the case of motion. A specific motion is *not caused* by time, yet *one specific motion may cause another.*

IV. If causation and interaction are not universal—and there is not only no proof that they are, but *there is proof that they are not—then there may be independent causal series.* Knowing processes might be *one* such independent series, and other existent objects another, and the two be in relation. Accordingly, whatever this relation might be, *i.e.,* whether it be one of correspondence or some other relation, its subsistence between series that are *independent* would be a matter of the lack of causal determination, and, in this respect, a matter of mere chance.

V. Such an hypothesis accounts for the *necessity of an inductive procedure* in gaining knowledge, a method, namely, that is identical with the lack of absolute certainty, and with the necessity of experimentation, guesses, trials, errors, and the *testing* by subsequent working. But the test by successful working is only an indication of the presence of the relation of correspondence and of truth, and is not this relation itself. Truth conditions success, but success and usefulness are not identical with truth, although they may indicate its presence.[30]

We must be careful, however, to guard against a misinterpretation of the admission, made some pages back, that "to make a mistake" and "to be in error" is a possibility, often become actual, for every kind of cognition. For many philosophers are prone to infer from this admission (1) that *consciousness* in general, or that the knowing process in particular, is *alone constitutive* of error; in other words, that all error, including illusions, hallucinations, wrong judgments, is either *percipi* or *concipi* in its *esse;* and (2) that, accordingly, since *some* entities are thus subjective in their *being,* the existence and the subsistence of *all* "things" is identical with their *percipi* or their *concipi.*

However, neither of these conclusions is implied by the admission of error. For, in the first place, if *some* things, *e.g.,* the seeming convergence of the rails of the railroad, were subjective in their being, this would imply other entities that are not subjective, but objective. Even Subjectivism cannot make everything subjective, as we have seen.[31] For example, the existence of a spirit is not identical with the idea or notion of it that is possessed by another spirit. And, in the second place, one is not obliged to admit even that all errors or error-objects are subjective in character. Indeed, other hypotheses account for them far better. Thus, in the case of perceptual errors of the type of the apparently bent, but actually straight stick in the water, the bentness is as *objective* as the straightness. The bentness is a characteristic of the complex, the *stick and* the *light* as this is refracted *by the water;* the straightness is the quality of the stick by itself. *Different relational complexes may*

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[30] For the development of these hypotheses, see the section on Realism; also cf. with the discussion of error just given, Chaps. XLI. and XLIII., II., and the references there given; also see Poincaré, *Value of Science, Science and Hypothesis, Foundations of Science,* trans. by Halsted (the last inclusive of the two above and of *Science and Method*); Bawden, *op. cit.,* Chap. VI.; Dewey, *Influence of Darwin on Philosophy and other Essays,* Chap. IV., especially p. 95; also Chaps. V.-XI. On pragmatism's doctrine of Truth and Error, see James, *Pragmatism,* lectures II., VI., and VII., and *The Meaning of Truth,* 1909; also Dewey, *Essays in Experimental Logic,* 1916; C. S. Pierce, *Popular Science Monthly,* December 1877, and January, 1878, and *Hibbert Journal,* II., 1908; Russell, *Philosophical Essays,* IV., on Pragmatism (one of the best criticisms), and V. and VII. on the Nature of Truth.

[31] Chap. XXX.

have different characteristics, even when one complex is a constituent of another complex, as in this case. In this situation the only error that is inherently *irremovable* from consciousness seems to be that of "taking," in the absence of knowledge of refraction, what is really a straight stick to be a bent one. But if knowledge of refraction is present, then two knowing processes may occur, in each case with *that correspondence* between the knowing and its object which constitutes truth. The one process has the straight stick by itself as its content; the other, the line of the stick as refracted by the water, *i.e.*, the bentness.

In the case of another class of errors, namely, those of judgments, of false hypotheses, and the like, the situation is somewhat different. We have previously presented the evidence for the philosophical and logical position, that not all entities *exist,* but that some only *subsist.* Numbers, space, and time, and all *states of affairs,* are examples of such mere subsistents. An existent is singular, particular, and concrete, and as such is correlated with a specific time and place, or at least with a specific time. A subsistent is not so correlated. The position that there *are* entities that are only subsistents results from the fact, that some specific *status* must be found for those entities to which we are led by following out implications, but which do not exist, as, *e.g.,* the geometrical relations of a *perfectly spherical object.* Scientific investigation shows that such entities are implied to be neither physical nor mental existents, and yet to be facts.

As concerns our specific discussion, therefore, we must ask the question, *What status have hypotheses that are in error, and yet are internally consistent,* examples being some of the great historical scientific hypotheses such as the Ptolemaic theory that the earth is the center of the universe with the planets, the sun and the stars rotating around it. This is, indeed, the apparent motion. Therefore, the inherent error in the knowing processes of all those who preceded Copernicus (1473-1543) may be said to have consisted in "taking" the *apparent* to be the real or existential situation. However, there must be something by virtue of which *the apparent is the apparent* and the "real," *the real.*

In solution of the inquiry which is thus suggested, it is to be said, that, if a theory is internally consistent, then *between* the knowing of that *state of affairs* which the theory describes *and* the (subsistential) entities of which this state of affairs holds, there is a relation of correspondence. If, now, one *takes* these entities to be also existential, and they are *not,* one is in error. On the other hand, if they *are existential,* then there is not only a correspondence between the knowing process and the subsistents, but also between the subsistents and the existents, as well as between the existents and the knowing. But, *because that which one takes to exist does not exist, is no ground for making it subjective.* Rather, if such an entity finds its place in a consistent and implicative theory, then, although not existential, it is *subsistential, and as objective as any existential entity.*

By this rather complicated theory, *error* may be defined as the "regarding" of something as existential that is only subsistential. Only "the regarding," however, is *subjective* in character, *i.e.*, conscious, and it is this, also, only to him who is immediately "making" the wrong identification of the merely subsistential with the existential. The "regarding" is, therefore, the only psychical feature in the whole error situation. That which is "regarded as" is neither psychical nor physical; yet it is objective. It subsists.

From the further discussion and development of this theory of error we refrain, although there are many remaining points of interest and of difficulty. But the discussion that has been presented may have sufficed to show (1) that Pragmatism does not give a satisfactory theory of *error*'s distinction from *truth;* and (2) that if, quite independently of pragmatistic doctrines, the endeavor is made to find a real difference between truth and error, we are not forced to grant that the *esse* of error is either its *percipi* or its *concipi*—in other words, that all errors are constituted by consciousness, or are conscious in nature. So much the less, therefore, is it justified to infer, as do some idealistically and subjectivistically minded philosophers, that the *esse* of *all* objects consists in their being known,—*i.e.*, that their *esse* is their *percipi* or their *concipi.*

2. *The Degrees of Pragmatism's Evolutionism*

From this discussion of the pragmatic doctrines of truth and error we must now return to the consideration of other phases of Pragmatism's *evolutionism.* This Evolutionism is advanced in different degrees by the various adherents of the pragmatic philosophy.

One "degree" of this evolutionism consists of the teachings just presented and criticized. Pragmatism takes over the point of view of the natural, especially the biological sciences, and, generalizing, maintains that not only organisms, but also *ideas, hypotheses, and theories evolve.* But at this stage of its development, Pragmatism also accepts unconsciously the realistic point of view of the sciences, namely, that within the usual limits of empirical error, organisms, inorganic elements and compounds, suns and stars, and mental processes, are known (in these sciences) essentially as they are, unmodified and uncreated by being known. Also, although these sciences are themselves regarded as evolving, nevertheless, in this "degree" of Pragmatism's development, it is never doubted that there is a *standard* of *absolute truth* which is approached nearer and nearer. Thus the possibility that, although *knowing processes* themselves evolve, they should, in the sciences and especially in the pragmatic theory itself, reveal "things" as they are, is never questioned. Indeed, in Pragmatism of this degree it is held that there is a *genuine objective evolution,* that is known by the pragmatist, and that "holds" of all, or, at least, of most "things." In all this, Pragmatism very evidently accepts the positions, (1) that there is an absolute truth as a standard or ideal; (2) that knowing, although related to the "things" known, *neither modifies* nor constitutes those things; and (3) that the relation between knowing and the known by which truth is constituted is one of *correspondence.*[32] These propositions are, however, all markedly inconsistent with Pragmatism's own implications, namely, (1) that truth is identical with usefulness and success; (2) that whatever, by way of ideas, theories, and the like, is useful and succeeds, is, therefore, *true in just this sense of the identity of the true with the useful;* (3) that all "things" *interact,* producing adaptations, and that knowing is itself an adaptation; and (4) that, accordingly, knowing must not only be produced or caused, but *must* itself causally bring about effects.

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[32] Cf. for these three points Chap. XL., III. and VII.; XLI; and XLIII.

In a further or *second degree* of the development of its evolutionism, Pragmatism aims to correct some of these inconsistencies. It still retains its realistic doctrine, derived from the natural sciences, that the "real nature" of "things" can be known, and can, therefore, be related to the knowing without being affected thereby. But it now maintains that, also, *all the principles of proof, all tests and criteria,* as well as *all specific theories,* have evolved, and have persisted and been accepted only because of their usefulness. However, *the standard of an absolute truth* is still tacitly accepted, both for Pragmatism itself as a theory, and for the sciences that it accepts. Yet the difficulty is recognized of finding an absolute criterion and test by which to make certain that such a truth has been attained. The position is taken, not that this truth cannot be won, but that, possibly, it may *not* have been, except by the merest chance, as it were, so that, in these circumstances, the only feasible test is *empirical confirmation* by immediate experience, success, and usefulness. At this stage, however, there still remains the inconsistency of a *presupposed absolutism* side by side with an *implied relativism* as regards *the nature of truth.*[33]

In the *third degree* of Pragmatism's development the attempt is made to remove the ground for this last criticism, by maintaining, that even *standards and ideals,* in fact, that the very "ideas" or principles of truth, of right and goodness, of correctness, and, indeed, of all tests and criteria have *evolved,* and that these ideas and principles have *persisted,* because of their useful and satisfactory character. But the thought of a realm of *facts* that are *independent of being known,* and that, if known, are not influenced by the knowing, *still lurks* in the minds of the *adherents* of this degree of evolutionism, as is shown by the attitude that is still taken toward their own theory. For it is maintained that this, at least, portrays *"things" as they are,* and the natural sciences are still drawn upon to furnish many of the details. *Thus the Realism in the position still persists.*

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[33] These three degrees of Pragmatism's *Evolutionism* will not be found to be as sharply distinguished in pragmatic literature as they are here. They are degrees in the growth of the pragmatic viewpoint until it reaches the extreme development that is found, *e.g.*, in Schiller's *Humanism* and Bergson's *Creative Evolution*. On the whole, Dewey and James and their followers represent the first two stages, Schiller and Bergson, the third.

Finally a desperate attempt is made to remove this last inconsistency by applying the concept of *evolution* to the very *idea* of *a real "world"* and to the *knowledge* of all those details in terms of which, because of the development of language, of beliefs, of conventions, and the like, this "world" is *thought of* by human beings. All that we regard the "world" to be, either *en masse* or in detail, is here interpreted as *man-made.* This is Pragmatism's *humanism.* If man were a lion, then were God also a lion, said Xenophanes. "But man is man," says Humanism, and, therefore, is everything *after the image of man.*[24]

But whether even this advanced degree of Pragmatism's evolutionism is sufficiently consistent is still a question. For, it is still important to ask, whether *man himself* is thus known *as he really is,* or only as *a mere invention,* a growth, a "working point of view," an hypothesis? But, if he is this, then it may be asked, Where is the leverage, the resting point, the *ποῦ στῶ* of the position? Must there not be "somewhere" a reality that is *not* man-made, that is *not* relative, and that is not dependent, in any way whatsoever, on being known? *Does not the position presuppose* this, and, also, that this reality is correctly known, even though it be (known) only as a pliable, plastic "something" that, as knowing processes appear in the evolutionary series, may be modified, altered, and, in short, "made" *in the form in which it is now known by virtue of its causal relation to the knowing process?* Finally, is this radical evolutionism *itself* man-made and humanistic, and relativistic in the sense, that *another theory* might have *become* man-made? Or does it present the real state of affairs?

To these inquiries the reply must be, that Humanism presupposes a definite *ontology,* and that it accepts this ontology on the basis of a *realistic epistemology.* In this respect it is quite like, *e.g.*, Phenomenalism. In fact it is a modern recrudescence of this position, adapted to the demands or influences of the general theory of evolution. No longer, in contrast with the earlier pragmatisms, does it preach the doctrine, that it may be, that we do *not* know; but, rather, like Phenomenalism, it explicitly concludes that we *cannot* know "things" as they are, but only as *we make* them, and, therefore, as they appear to us. Also, like Phenomenalism, it implicitly presupposes, as a basis for this conclusion, *a genuine knowledge of some "things" as they are,* and finally concludes with a theory which, as a whole, presents a states of affairs that is presumed to be real, and not "manufactured" in any sense. Thus it is, that a realistic epistemology emerges both at the *beginning* and at the *end* of Humanism.[85]

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[24] Schiller in *Humanism*, Axioms as Postulates; cf. Schiller in *Personal Idealism*, Bergson in *Creative Evolution*, and James in *Pragmatism*, Lectures II., VI., and especially VII., p. 242, "Schiller on Humanism"; also, *The Meaning of Truth*, Lectures III. and V., and *Essays in Radical Empiricism*, Chaps. VII. and IX.

IV. GENERAL CRITICISM OF PRAGMATISM

Every degree of the development of the pragmatic position, except perhaps the first, is open to the charge of the same inconsistency of which, in this final degree, Humanism is guilty, namely, that *a non-pragmatic position is tacitly presupposed as a basis upon which both to develop* the pragmatic theory of knowledge *and also to accept* the resulting *detailed theory* as true. The first degree of Pragmatism *seems* to escape this inconsistency, but this is only because the *implications* of such an elementary Pragmatism are not made explicit.

The crucial question is, therefore, whether the pragmatic theory in its *complete* development is to be *accepted and interpreted pragmatically,* or not?[86] *Consistency* demands that it shall be so accepted, and yet, if it is so accepted,—on the ground, namely, that it is a theory that works well, and is useful and satisfactory—then one must infer that it is a theory that is true *only relatively, and not absolutely.* But, on the other hand, *Pragmatism is a theory* that is advanced as true in the *latter,* and not in the former sense. Also, if Pragmatism is itself interpreted pragmatically on the ground of *consistency,* yet not because consistency is useful, *but because it is consistency,* then, again, *not a pragmatic, but an absolutistic criterion and characteristic of truth* is accepted. The only escape from this is to accept consistency as being merely useful, but this is at the cost of introducing *relativism* once more as characterizing, not only other truth, *but also the truth of Pragmatism itself.* On the other hand, if the pragmatic position, either in its partial or its complete development, be interpreted *frankly* as *not relative,* as *not pragmatic,* but *as portraying absolutely the real state of of affairs* concerning the "things" it investigates, then it is *disloyal* to its own theory of truth and of knowledge, and is open to the charge of *inconsistency,* even as this is defined by *the very absolutism which is therewith tacitly accepted.*[87]

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[85] Cf. Section 4, Chaps. XXXIX. and XL.

[86] The question raised, *e.g.*, by Royce in his presidential address, "The Eternal and the Practical," *Phil. Review*, Vol. XIII., No. 2, March, 1904.

This is the *dilemma* in which Pragmatism finds itself. It would *choose* to be relativistic toward everything—except the pragmatic theory; but toward this it must, seemingly, be absolutistic, though to be this is to incur new difficulties in order to avoid others. It *would* hold that all "things," including all knowing processes, *interact* with other "things," with the result that all "things" are modified by one another, constituted by one another, and adapted to one another. But Pragmatism does not take this position as regards those "things" or *states of affairs* that are known in the pragmatic theory, and that are related to *the knowing that takes place in the mind of the pragmatist.* Indeed, it *cannot* take this position toward itself, without making itself *relativistic,* and not absolute; yet it *must* take this position toward itself in order to be consistent.

Which horn of the dilemma does Pragmatism "really" accept? The answer to this inquiry depends psychologically upon the attitude which one takes toward the character and use of logical principles. Can such principles be used unconsciously and without having received formulation, or not? Can one thus unconsciously have his thinking conform to and presuppose certain principles; *e.g.,* can one in *asserting* and *denying, thus use and presuppose* the principle of contradiction? If these "things" can be done, then the answer to our first inquiry is quite evident—and it is an answer that is quite in accordance with that standpoint which is accepted and presented in our introductory chapters. That answer is, that Pragmatism *itself logically*—no matter what attitude the *pragmatist* may will explicitly to express in indignant denial of

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[87] Royce's criticism, *ibid.*

this—contradicts itself by explicitly developing the definition of all truth as relative, and by then making a tacit exception to this definition as regards the truth of itself as a theory.

To the writer the fact of this self-contradiction in Pragmatism makes the theory impossible of acceptance, while it also furnishes further empirical evidence for Realism. For it is upon *a realistic basis* that Pragmatism rests as regards the epistemological interpretation of the *knowing* of those *states of affairs* that form the "content" of the theory itself, or that are "the objects known" and described in that theory.

The crucial question for Pragmatism therefore is, Shall this realistic basis be observed and developed further? But, if it is, what becomes of Pragmatism? And if it is not, what becomes of Pragmatism's consistency?

V. CONCLUSION

This discussion of Pragmatism has been so long that it may be well to give a summary. The theory represents the most modern development of the *positivistic and naturalistic* tendencies in philosophy, as these have been influenced by the natural and empirical sciences, and especially by the general doctrine of *evolution*. The theory is, however, full of inconsistencies, some of which are most damaging. If these be dismissed by Pragmatism with the claim, that consistency is one kind of usefulness, but not the only kind, and that, therefore, it need not trouble itself over these internal difficulties, and that it itself may be useful and satisfactory and therefore true notwithstanding them, then, in accepting usefulness and satisfactoriness as the ultimate characteristic of itself as a theory, Pragmatism must grant the right of other opposed theories to maintain *this same status,* as well as whatever follows from it. But, one will readily appreciate, that to some philosophers *other* theories may be quite as satisfactory and useful as Pragmatism is to its adherents, and, therefore, by Pragmatism's own doctrine, *be quite as true.* Then *why*—one naturally asks—advocate Pragmatism as *against* these other theories?

The fact is, however, that Pragmatism's identification of truth with usefulness and resulting satisfaction, and the like, does not stand the test of criticism. Indeed, Pragmatism does not accept this identification in regard to the presumed truth of its own theory. Toward itself, it takes the position that, although it is a useful and satisfactory theory to the pragmatist, it is not for these reasons *true*. Rather, its truth is *tacitly* held to "rest" on another relation, namely, that of correspondence between the known *state of affairs* described by Pragmatism *and* the *knowing* of this, and it is *because the theory is true in this sense, that it is also useful and satisfactory*. Usefulness and resulting satisfaction are thus *tacitly* held by Pragmatism to be, at most, only *indications of* or *tests for* its own truth,—a truth that conditions *them*, but with which *they* are not identical.

However, Pragmatism does not consistently stand by even this last tacitly presupposed position, namely, that the usefulness and satisfaction of an idea, a theory, a belief are indications, or tests of truth. For, toward *other* theories which are directly opposed to the pragmatic, and which are *satisfactory* to their adherents, Pragmatism takes the position, that, although useful, these theories are *not true;*[38] indeed, in their case, Pragmatism maintains that the very fact, that the idea, or "the holding of them to be true," *itself generates* or conditions the effect of satisfaction, makes against their being true. In these circumstances it is quite evident that Pragmatism cannot consistently advance the doctrine, implied by its evolutionism, that *mere* usefulness and satisfaction are not only "marks" of, but also are *identical with*, truth. This identification makes it impossible, as we have seen, for Pragmatism to recognize as false anything that has persisted and is still extant. Yet, inconsistently therewith, Pragmatism regards those theories that are opposed to it as thoroughly in error.

On the other hand, if one considers, not the consequences, but the suppositions upon which the pragmatic theory rests, and the positions which it takes toward itself, and compares these with its explicit teachings, one again discovers many inconsistencies. *Explicitly*, in its epistemology, Pragmatism is *relativistic* and *individualistic*. But, for itself, it presupposes Absolutism and a universal *standard*. Further, *explicitly*, in its most advanced degree of development, it is *phenomenalistic*, with a strong tendency towards Subjectivism. But, toward itself and in respect to the *ontology* upon which it rests, it is frankly *realistic.* Its *cosmology* and *teleology* are those largely of the generalized theory of evolution which it obtains from the natural sciences, and which it both *rests upon* and further develops. Also, its *ethics* and entire *theory of values,* as explicitly developed, are evolutionistic and relativistic, while, by its explicit teachings, the theological problem is as capable of as many solutions as are satisfactory and useful to different races, nations, and even individuals.

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[38] *E.g.*, James, *Pragmatism*, Lectures III. and IV.; *Pluralistic Universe*, Lectures I., II., III.

Toward the problem of the nature of consciousness, Pragmatism offers no positive contribution, except by elimination. It does, however, get away from any explicit teaching, that there is an ego or *substance-like* and indivisible, simple soul, or that consciousness in its several phases is a *substance or energy.* Rather, it approaches the realistic position, that consciousness is either a specific relation or a dimension,[39] and the dynamic view of modern psychology, that consciousness appears and disappears on certain conditions, so that it is the generic name for a specific set of *processes.*

For its reaction and protestations against the domination of the "thing" and *substance* concepts in our thinking, Pragmatism deserves only credit. Yet, since these concepts have been and still are satisfactory to some thinkers in the development of science and philosophy, Pragmatism must admit, by its explicit teachings as to the nature of truth, the truth of these concepts.

Like other philosophies, Pragmatism is the result of intellectual endeavor. It therefore presupposes the correctness and trustworthiness of at least *some* intellectual methods.[40] Yet, *in its extreme form* of evolutionism and anti-intellectualism, it denies to intellect all power to reveal the absolute truth, ascribing to it only the ability to produce falsifications that are nevertheless useful.[41] In this attack, however, intellect is unjustifiably limited to the use of only one set of rational principles, namely, those of the old logic of "things." The attack fails, however, because in the solution of certain problems, such as those of motion and change in general, other methods of analysis and synthesis are at hand for intellect to use. The attack also fails, if that presupposition which Pragmatism itself makes as regards its *own* argument be recognized, namely, that the *old logic* is valid for the field of ordinary discourse. One can readily show, therefore, that *both intellect and perception* reveal *fact,* and that truth is obtained by checking each of these processes by the other.

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[39] James, *Pluralistic Universe,* Lecture V.

[40] Cf. Chap. XL., IX., XLI., XII. and XIV.

[41] Bergson's position in *Creative Evolution.*

This, indeed, is the method that has been used by practically all modern sciences, especially by those natural sciences upon which Pragmatism in particular is based. Therefore Pragmatism's anti-intellectualism is acceptable and stands the test of criticism *only in so far* as it is a protest against the *exclusive* use of the old logic of "things." This was the method of scholastic science and philosophy, and it has been the method also of much modern philosophy. *But it is not the method and the intellectualism of modern times.*

Just as one finds both acceptable and unacceptable doctrines in Pragmatism's anti-intellectualism, so also does one find them in its evolutionism. Pragmatism as a philosophical position is based on the general doctrine of *evolution* more than upon any other scientific principle. For, even in that phase of Pragmatism's anti-intellectualism in which all intellectualizing is held to be a process of falsifying, and it is concluded, that only "the evolving" is real, it is *only the order of argumentation* for evolutionism, namely, the *ratio cognoscendi* that is different. The *ratio essendi,* the real logic of the order of its argument, is still the same, namely, *that Pragmatism is derived from the concept of evolution as applied to everything.*

In its use of the doctrine of evolution, Pragmatism, however, goes to extremes. It is, undeniably, a fact of science, that *many* "things" *evolve.* The list of "things" that do, includes stars, and suns and planets, perhaps, also, the chemical elements, certainly plants and animals, and, finally, such human institutions as language, religion, literature, art, science, and philosophy. But, just as the *principles of biological evolution* do not hold for *all* these evolving "things," so, also, is it a question whether the general *principle of evolution* applies to *all* "things" without exception. Pragmatism, somewhat uncritically and vaguely, maintains that it does. But, it may be asked, whether, *e.g.*, the *principle of evolution,* as distinct from the *knowledge* of this principle, itself evolves? Certainly the knowledge of it may, but does *it,* even if all other "things" do? But further, do space and time evolve, or does only the knowledge of them? Do numerical relations, although the evolution of other "things" may take place in accordance with these? Do those general logical principles that underlie the very principle of evolution itself? Finally, do all those *states of affairs* that hold of those entities to which we are led by consistent thinking, namely, the realm of subsistents? Or those ultimate elements,—whatever these may be, electrons, or something else,—out of which the *existential* physical world is "made"?

If the answer to these questions, some or all of them, is *negative,* as it must be, then the position that must be taken toward the principle of evolution is, that *its field is limited. Not all "things" evolve! Some do, but some do not.* Those which do, are those *existents,* physical and mental, which are complex, and not simple. But no subsistents evolve, and some existents do not, namely, those existents that are absolutely simple. Only *complex* existents, correlated as they are with specific times or places, one or both, are subject to the general principle of evolution, and that, perhaps, in only the most general sense of this term as meaning *change in composition,* usually from the less to the more complex.

The logical and philosophical position that Pragmatism presupposes or takes toward itself both in its foundation and as a fully developed, reasoned theory, confirms this criticism of evolutionism. For example, it may be asked: Is the pragmatist ever found presenting his Pragmatism as a theory that is true (useful) only *today,* but that would not have been true a hundred years ago, or that would not be true a hundred years hence? Does he not, rather, offer it for acceptance as a position which presents a *state of affairs* regarding knowledge, truth, and the like, that *was* a fact before it was known to be a fact, but that has become known in recent years and that will remain a fact indefinitely in the future, even though it be *forgotten?* Also, does not the pragmatist take the position toward his own theory, that, although the knowledge of it has evolved, the complex state of affairs which it presents has not?

Seemingly, if we can judge by the character of the pragmatist's own propaganda, only "yes" can be answered to these inquiries. But, if a distinction is presupposed between, on the one hand, that *state of affairs* which has been fact "all the time," and has *not* evolved, and, on the other hand, *the knowing, which has evolved,* then is it not also presupposed that, although the knowing of the pragmatic theory may be both satisfying and useful, nevertheless, these characteristics do not constitute the truth of the theory? And is it not also presupposed that the theory is true, because the knowing that has evolved reveals the real nature of "things," so that there is a relation of correspondence between the knowing and the known?

Again must our inquiries be answered affirmatively. The same general position that Pragmatism takes for itself must be adhered to in the philosophical interpretation of the character of other attempts to know. There are two realms of entities to become known when *the conditions for knowing* have themselves *evolved.* These two realms are those of *existents* and of *subsistents.*[42] *Some existents evolve,* and, among these, are *specific knowing processes,* which can themselves become known as well as can other existents. The evidence is, however, that knowing, once it exists, is not subject to the same principle of *causal interaction* as are other evolving "things." For, although the knowing is, of course, related to the "thing" known, the two are independent of each other. The knowing takes place, and knowledge arises, yet in no case with absolute certainty, but only with tentativeness. Among ideas and beliefs, theories and hypotheses, there are variations, survivals, and deaths, in fact a genuine evolution. The useful ideas and theories survive, their usefulness being conditioned by their truth, *and not conversely,* until finally a *state of affairs* is *revealed* concerning both "things" that exist and "things" that do not, which knowledge has a high degree of probable, though, perhaps, never of absolute truth.

Pragmatism in its evolutionism presents much that is true in this sense. But, just as the theory itself has had a history, and has evolved, without that *state of affairs* which it describes having enjoyed the same fate, so Evolutionism may hold of many "things" *without holding of all.* This, rather than that *universal evolutionism* which Pragmatism maintains, is *the verdict of that modern criticism* which is so fortunate as to be free from the *naturalistic bias* that is engendered by the undue emphasis of the *natural sciences* in respect of their data, their methods, and their dominant concepts and generalizations.

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[42] Cf. the classification given in Chap. XLIV.

GENERAL BIBLIOGRAPHY

The literature on Pragmatism has been very extensive in recent years in respect to both volumes and articles. The following are some of the more important volumes by the leading American and English pragmatists: H. H. Bawden, *The Principles of Pragmatism,* 1910; J. E. Boodin, *Truth and Reality,* 1912; J. Dewey (with his pupils), *Studies in Logical Theory,* 1903, 2nd ed., 1909, (cf. *Empirical Logic,* 1916); *Ethics* (with J. H. Tufts), 1909; *Influence of Darwin on Philosophy and other Essays; Education and Democracy,* 1916; and many articles in the philosophical journals; Wm. James, *Meaning of Truth,* 1909, *Pragmatism,* 1907, *A Pluralistic Universe,* 1909, *Some Problems of Philosophy,* 1910, *Memories and Studies,* 1911, *Essays in Radical Empiricism,* 1912; A. W. Moore, *Pragmatism and Its Critics,* 1910; J. B. Pratt, *What Is Pragmatism?* 1909; F. C. S. Schiller, *Humanism,* 1912, and an Essay in *Personal Idealism,* ed. by H. Sturt, 1902.

The leading French pragmatist is Bergson, *Creative Evolution,* trans. by Mitchell, 1911; *Time and Free Will,* trans. by F. L. Pogson, 1910; *Matter and Memory,* trans. by Paul and Palmer, 1911.

Among German pragmatists there are: W. Jerusalem, *Introduction to Philosophy,* trans., 5th ed., 1910; H. Vaihinger, *Die Philosophie als Ob,* 1911: Nietzsche was one of the earliest pragmatists, especially in his "Darwinian Period,"—a fact that is generally overlooked. *Works,* Eng. trans., ed. by Tille; cf. monographs on Nietzsche by A. Riehl, Vaihinger, Eisler, Wolf, and Menchen.

Closely allied with Pragmatism and regarded by some as pragmatists are: Poincaré, *Science and Hypothesis, Value of Science, Science and Method;* Mach, *Science of Mechanics,* and *Wärmelehre* (last part); LeRoy, in many articles; Karl Pearson, *Grammar of Science;* Eucken, *Main Currents of Modern Thought,* and a number of other volumes.

For a discussion and criticism of Pragmatism see: Wm. Caldwell, *Pragmatism and Idealism;* C. S. Peirce, *Popular Science Monthly,* December, 1877, and January, 1878; G. Tyrell, *Christianity at the Crossroads,* 1909, *Lex Orandi,* 1903, *Lex Credendi,* 1906; A. O. Lovejoy, "The Thirteen Pragmatisms," *Journ. of Phil., Psych., and Scientific Methods,* Vol. V., p. 5; Royce, Presidential Address on "The Eternal and the Practical," *Phil. Review,* March, 1904.

SECTION III

SUBSTANCE PHILOSOPHIES

OBJECTIVE IDEALISM

CHAPTER XXXIV

INTRODUCTORY

I. OBJECTIVE, SUBJECTIVE, AND PLATONIC IDEALISM

OBJECTIVE Idealism is the name for that philosophy which maintains that, while so-called physical entities are *not*, as Subjective Idealism holds, either the sensations or the ideas of *finite* spirits, they (physical entities) and, also, all other entities are, nevertheless, in some way *psychical* or *mental* in nature, especially as identical with the mental "contents" of some Absolute Mind, Self, or Spirit. Of all modern philosophical systems this position has received, perhaps, the fullest development, and exerted the widest influence in philosophical and especially in religious circles. Phenomenalism is the only position to dispute these claims, but Objective Idealism probably far exceeds Phenomenalism in the number both of its adherents and of the pages offered in its behalf in the classical tomes of such philosophers as Spinoza, Fichte, Schelling, Hegel, Schopenhauer, Bradley, and Royce.

Historically Objective Idealism grew out of Phenomenalism in the efforts of the critics[1] of this latter theory to remove its difficulties and to present a coherent and consistent system. Therefore, thus regarded, Phenomenalism, with its emphasis of the epistemological problem and of the ego-centric predicament, becomes the most completely developed and the most influential of all modern systems. However, while the study of historical development might reveal a certain continuity between Phenomenalism and Objective Idealism, *criticism* from the standpoints of modern logic shows that the two positions are quite different in their *logical* structure. For Phenomenalism is based on the *modification theory of relations*, and Objective Idealism on the *underlying- or transcendent-reality* theory.

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[1] *E.g.*, Fichte.

Sometimes Objective Idealism is called Transcendental Idealism, and, as well, also, Absolute, Epistemological, and Ontological Idealism. The theory differs (as has just been stated) from Subjective Idealism, since, whereas this latter theory makes at least the whole so-called physical world *subjective* in its *being*, Objective Idealism grants the *objectivity* of that world with reference to *finite* conscious individuals, such as human beings. For Objective Idealism, this "world," with all its relations, events, objects, and qualities, may be the manifestation of One Infinite Spirit, but it *is not* the mere sensations or ideas of *finite* spirits. Indeed, for Objective Idealism, finite spirits may themselves, like physical "things," be "absorbed," in some manner, into a single great all-inclusive spirit. Objective Idealism may, therefore, very properly be called a *psychism*, though it is not one that develops out of Naturalism.[2] Indeed, it is *a psychism* that is extremely critical toward all those naturalistic tendencies that have been discussed under the captions of Pragmatism, Parallelism, Positivism, and the like.

It is important to note, however, that, together with Subjectivism, which is also a *psychism*, Objective Idealism differs very radically from that other great historical Idealism, the Platonic. Indeed, this last theory is, strictly speaking, not a *psychism* at all, but *a Realism of Ideals*.[3] For it, ideas, percepts, acts of will, and the like, are, as psychical entities, *real*, as, also, are physical objects; and both of these types of entities can be known "as they really are," unmodified and unconstituted by the act of *knowing*, and although there is error and opinion in the midst of truth and genuine knowledge. But, also, in Platonic Idealism, *"ideals"* are maintained to be quite as real, and quite as genuinely known, as are other entities. Such ideals are, *e.g.*, those of *absolute and perfect truth*, of *goodness*, and of *beauty*, and also those of the perfect man, the perfect circle, the perfect rose. In fact, for each realm of existing "things" there is the ideal, the standard, the pattern, the archetype, which may be approached, but never reached. Indeed, concrete, particular "things" come and go, appearing at certain times and, perhaps, also places, but *the ideals are neither here nor there, neither now nor then.* They are timeless, and, in that sense, eternal; spaceless, and, in that sense, omnipresent; subsisting, but not existing.

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[2] See Chap. XXXII.

[3] Chaps. XLIV., XLV., and XLVI.

These distinctions between ancient and modern Idealism are most essential. Clearly, ancient Idealism is not a psychism, since, for it, all "things" are not ultimately mental in nature, and there is no insuperable difficulty in the way of knowing "things" as they are; also, "things" are neither altered by being known, as in Phenomenalism, nor wholly constituted by knowing, as in Subjective and Objective Idealism. Ancient Idealism is, therefore, a Realism not only as regards physical and mental entities, but also as regards entities that are neither physical nor mental.

Objective Idealism also, while it is *ontologically,* in respect to its *conclusions,* a psychism, is *epistemologically,* as regards its basis, a Realism. Its psychism consists in its final position that the ultimate nature of *all* "things" without exception is mental; its Realism is identical with its position,—taken, perhaps, as a result of criticism of other philosophies,—that there are no difficulties *inherent* in the knowing situation to prevent our getting at this *ultimately psychical* character of all "things."[4] Yet there are difficulties. For, that all "things" are ultimately psychical, is a proposition that is not only not evident to direct experience, but that is difficult to establish. Yet, with this demonstration once made, Realism again appears, though not a Realism of the senses and of ordinary experience, but of *rational* and also, perhaps, of emotional processes. For by rather devious rationalizing, the objective idealist finally comes to *know* that all "things" are psychical, and, knowing this, finds this knowledge to be confirmed by an emotional experience, oftentimes ecstatic in character, in which it is felt, that all is spirit, and indeed that he himself is one with that spirit which is all.

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[4] Chaps. XL., III.; XLIII.

II. THE HISTORICAL DEVELOPMENT OF OBJECTIVE IDEALISM OUT OF PHENOMENALISM

The question has already been discussed, whether the problems of philosophy *are problems* because they have appeared in a specific historical development, or because they concern facts that present difficulties which are quite independent of history.[5] It has also been found, in answer to this question, that, if there are historical facts—and, of course, there are—there may be *other* facts—facts that are not historical or genetic. One can distinguish, therefore, facts that are not historical, and facts that are historical. In turn, within the realm of facts that *are* genetic in character, there are those specific facts that are *identical* with the attempts and endeavors to know—to get knowledge, and, within this field, there is, again, the still narrower group of facts that are identical with the *awareness of problems.*

The fact of the awareness of problems does not imply, however, that the problems of which there is an awareness are in every case *real* problems. Indeed, the mere development of knowledge and of attempts to know oftentimes produces *artificial* problems. On the other hand, if all problems were produced by the very development of the attempt to know and to solve them, then would there be no distinction between real and artificial problems. If there are real problems, therefore, it is because they concern facts and not because they have had, as problems, a history or development.

Objective Idealism historically became aware of its problems in reactive criticism of Phenomenalism and in the development of the monistic, *substance* doctrine of Spinoza (1632-77). The historical fact constituted by this reaction against Phenomenalism was the observation of the contradictions that are involved in this philosophy.

Phenomenalism is, as we have seen, the position, that the ultimate nature of "things" is *unknowable,* and not merely unknown, and that only appearances, or phenomena, come within our ken. The position implies, however, that the unknowable things-in-themselves are, nevertheless, *known* to be *things,* each of which is identical with itself, *all* of which subsist as *many,* and at least some of which *act causally* on a *thing-like ego to produce* sensations.[6] Further, and inconsistently with the completed form in which the theory is offered for acceptance, Phenomenalism is assumed to present *a state of affairs that is reality and not mere appearance,* and that is neither constituted nor altered by the knowing process to which it is related.

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[5] Chaps. I., XIV., and XXVIII.

This specific problem as to the character of the relation between knowing and that which is known, is a *real problem,* and Phenomenalism is one result of the attempt to solve it. However, in the working out of the phenomenalistic solution to this problem, *artificial problems* arise, because of the *presuppositions* that are made, and because of the *logic* that is used. For example, the problem as to what "forms" or principles are inherent in the mind, or in reason, is an artificial problem which arises out of the assumption, that knowing involves a *thing-like,* substance-like, spiritual self or ego. So also the problem as to the continuity and discontinuity of space and time, which constitutes an antinomy, is *artificially produced* by ignoring the modern principle of *order,* and, accordingly, by assuming the specific principle of the old logic, that the *only way* in which parts form a whole is by being related *additively.*

One stimulus to the development of Objective Idealism out of Phenomenalism came from the observation of those contradictions that have just been mentioned as concerning the *problem of knowing.* This problem still persists. As involved in this problem there was for Idealism the further problem, as to whether *the knowing* could in any way,—either experimentally or by an analysis *in situ*—be *removed* from that which is known, so that, indirectly, perhaps, the world could be known *as if it were not known.* Also there is the problem, as to what the character of this "world" is, *e.g.,* whether it is one or many, and, if *one,* what the nature of this *oneness* is.

These problems are real, the attempts to solve them constituting a good part of the development of philosophical thinking during the last hundred and fifty years. Yet these same problems can be reopened today as if they had never been examined before, and the solutions to them *compared* with those solutions which were given in the past. In other words, the *solutions* of the past, and the logic that underlies these solutions, can now be reviewed from the standpoint of that more thorough understanding of logic which we now possess.

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[6] Schulze in *Ænesidemus,* 1792, ed. by Liebert, 1911; J. S. Beck in a volume published in 1796; and Fichte in his *Wissenschaftslehre.*

If we proceed from this standpoint, and in this way, we discover that Objective Idealism is correct in its fundamental criticism, that Phenomenalism, although it explicitly developed the *contradictory* position, nevertheless tacitly presupposes that *certain "things,"* namely, the *state of affairs* concerning knowing, could be known as they really are. It accordingly follows, for Idealism, that *other "things," even the general character of the whole universe,* may also be so known.[7] But, if this is the case, then we have a certain "something" both *known* and *related* to the *knowing,* and yet *independent* of the knowing, and conversely. This state of affairs is, however, a special case of the validity of *the theory of external relations,* namely, that two terms can be related, and yet be independent of each other in the sense, at least, that neither modifies or constitutes the other.

This theory of relations is, in general, applicable—as we have already found—to all those cases of related terms in which any term can be removed experimentally, and the other terms remain unaltered, or in which an analysis *in situ* reveals this same independence. Such an analysis is illustrated by all strictly functional relations, as, *e.g.*, the functional relation between time and motion. Motion and time are related; but they are independent in the sense that motion does not "make" time, nor time in any way act *causally* on motion. Yet motion presupposes, and is logically subsequent to time, since there would be time, were there no motion. The one is the independent variable, the other the dependent. Specific *existential* motions are correlated with specific periods of time, and not with other periods, and these other time periods are not correlated with those specific motions. Yet their correlation with motions *that can be imagined* is implied. In fact, there is no time period for which there is not implied the possibility of specific motions, imagined, though not existential. But in the case of all such motions, as well as for existential ones, the two terms, *the motion and the time,* are independent, though related. This is the logical doctrine that underlies the modern scientific concept of a *functional* relationship as different from the *causal* one.

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[7] Hegel, *Logic,* Bk. I., I., Chaps. I. and II., and Bk. II.; also *Phänomonologie,* Chap. III.

It is a further fact, that the actual course of events experimentally removes a specific, particular motion from correlation with certain specific times; *e.g.,* present motions are not correlated with past time periods. Thus, even in the case where the motion is not existential, but imagined, the method of analysis *in situ* shows the character of the relation between motion and time to be one of logical priority and of independence. This means that, *although the motion can always be imagined to be present,* it can, nevertheless, be ideally eliminated, *so that we can study time and space without studying motion.*

The logical situation concerning knowing and the "thing" known is quite similar to that which concerns motion and time,— as it is to the credit of Objective Idealism, *in reaction against Phenomenalism,* to have discovered. That *a specific knowing,* either existential or subsistential, is correlated with every object that is known or thought of, is to be admitted. This means that, although *this or that knowing* is eliminated by the natural course of events, nevertheless *all knowing cannot be eliminated from known objects.* But this is, of course, a truism. For, first, one can argue, that, just as anything that we do actually know is related to the knowing, so also would anything be that we *might* know. Secondly, one can argue that the very *attempt* to "get at" an object as unknown only again brings in the knowing—in other words, that knowing is presupposed by the very attempt to eliminate it. Thirdly, it can be argued, that, even if the attempt to think away all finite knowing were successful, nevertheless *the knowing of an infinite being* must be regarded either as possible, or as imaginable, or even as necessary. Fourthly, one may argue, that *object implies subject,* and conversely, and then interpret *subject* as the equivalent of the knowing process.

One, some, or *all* of these arguments *are* advanced by those who are inclined to accept an idealistic (psychistic) solution of the epistemological problem. Indeed, one may put them all together, and call the situation which they emphasize *the ego-*

centric predicament. For they all find that, for one reason or another, we are always in the difficulty of being *unable* to know any entity that is *not* known, in order, if this be desired, to compare it *as unknown* with it *as known.* Or the predicament is, that we cannot escape the fact that the known world,—the only world that we know—is, in every instance, *related to some kind of knowing.*

It is very evident, however, that this predicament is not a serious one, if, while the *presence* of knowing in relation to every known object is not to be denied, it can nevertheless be shown *that knowing makes no difference to, and neither constitutes nor alters, that which is known.* Such a demonstration is identical with the ideal elimination of knowing by an *analysis in situ.* But that knowing *neither constitutes nor modifies its object,* at least in so far as it is finite knowing, is precisely the presupposition that is made with regard to the knowing of any *state of affairs that is advanced as true by any theory.*

It is this presupposition that Objective Idealism recognizes in its criticism of Phenomenalism. As in the instance of any functional or external relation between two terms, when neither can be actually eliminated, but each is related to the other as if that other were not present, so it is with the relation between *knowing* and *the known. The object is related to the knowing as if the latter were not present.*

It is in this way, by means of modern logic, that the ego-centric predicament is solved. Indeed, the predicament is thus shown not to be serious, or in fact not to be a predicament at all, but only a problem, which, though real, and not artificial, is nevertheless *solved* in the presuppositions which are made in presenting any specific theory or philosophy as true, or any specific *state of affairs* as real.

It is, now, this specific logical doctrine or principle that was discovered by Objective Idealism, in its criticism of Phenomenalism, to underlie the knowing situation. But since the principle is also a logical doctrine that underlies the *functional* relationship, its presence in the knowing situation means, that the relation between *knowing* and the *entity known* is not *causal.*

This discovery marked a genuine advance in philosophical thought, quite analogous to the advance, in science, from the domination of the concepts of *substance* and *cause* to the *use* of the *concept of function.* It is also a discovery which carries with it the acceptance of *the realistic principle* in epistemology, and means that Objective Idealism, as the doctrine that *everything is ultimately psychical,* is quite consistent with Realism, providing conclusive evidence, or correct arguments, could be found for accepting this conclusion as the final verdict concerning the nature of reality. However, it is just this evidence and these arguments that are lacking, or that have, at least, not been found up to the present time.

In summary, we may say, that the ego-centric predicament is the name, therefore, for the specific state of affairs, that *the known object is always related to knowing,* and that it is *somewhat difficult* to find a way by which the knowing can be eliminated. The proposition, however, that *the knowing* and *the known object* are related, has important consequences provided only that it is combined with some other general principle which is also used as a premise for deduction. Thus, that the object known, thought of, mentioned, and the like, *is related* to knowing, thinking, mentioning, is of consequence *only* provided such related terms *either affect one another, or demand an underlying or transcendent reality to mediate the relationship.* The former assumption is made by Phenomenalism; the latter by Objective Idealism. Therefore, although the two systems are historically continuous with each other, they are also *logically distinct.* Each system is based upon or is logically derived from a different theory of relations.

CHAPTER XXXV

THE LOGICAL DERIVATION OF OBJECTIVE IDEALISM: CRITICISM

THE problem of the unity of the universe is a real and not an artificial problem, although it is open to question, whether or not the specific solution which Objective Idealism gives to this problem is valid or not. The universe is, undoubtedly, a unity of some kind. It is, *e.g.*, at least *one* totality. But whether or not it is more than this, *e.g.*, whether it is *one continuum*, or one *organic* whole, is very distinctly a further question that demands the most patient and careful investigation.

However, it is a distinguishing characteristic of Objective Idealism that it contends that the universe is not merely a totality, or an organic whole, or a causal system, but, in some way, an Absolute Unity. In this respect Idealism is Numerical Monism.

This specific solution to the problem of the unity of the universe, Objective Idealism derives, however, not by an empirical and inductive procedure, but by an *a priori* and deductive method, in which specific consequences are inferred from specific assumptions. These assumptions are identical with the postulation of the *underlying-reality theory of relations* as holding for the manifold and the totality of the *related terms* of the universe. And as we have already seen, this theory of relations is in turn the result, historically, of the domination of the concept of *substance* in the traditional logic and philosophy—a concept which entered this tradition because of the influence of the *concrete, particular physical thing* as the model for thinking. For, to naïve thought, *the physical thing* does, indeed, appear to be *one substance* in which many qualities inhere.[1] Objective Idealism, therefore, represents the continued effect, on philosophy, of the influence of this model.

Such an historical development is, however, now subject to

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[1] Fichte, *Wissenschaftslehre*, trans. by Kroeger, II., II., p. 160 f.; also pp. 113, 134-139.

logical formulation, with the result, that a purely logical development of Objective Idealism is quite possible.

In order to make such a logical presentation and development, let us, then, assume:—

I. *There are many diverse "things" or entities revealed to our experience.*

II. *These "things" or entities are experienced as existing or subsisting as particular, individual entities, i.e., with each entity itself, and not another—in other words, with each entity different and distinct in its individuality from every other entity.*

Comment. This is one phase of the *principle of identity.* In reference to each entity, other entities are experienced, but *are not it.*[2]

As a *generalization* from this experience, let us assume

III. *If there is one "thing" A, there is another "thing" B that is not A, i.e., that is non-A in its individuality—in other words, let us assume that, as we think and know A, we can also think and know non-A.*

Comment. This is the way in which the *principle of contradiction* is derived empirically, although it has *come* to be regarded, in the traditional logic, as a law that is *resident* in the mind, or in the thinking process itself, and, therefore, as a law in accordance with which we *must think* on the ground that an *active* entity must *act* in accordance with its own nature.[3]

Accordingly, let us assume, further, that

IV. *The many "things" that we experience are related in many specific ways, and, among these ways, by the relation of implication, whereby any entity A necessitates (the being of) its contradictory non-A, so that, for any entity, A, its contradictory, non-A, must be thought.*[4]

Finally let us assume that

V. *If one entity necessitates the being of another entity, the two entities are inseparable, and*

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[2] I. and II. are admitted by Fichte, Schelling, Hegel, Schopenhauer, and in fact by all their followers and predecessors among objective idealists. I. and II. merely postulate the "world" to be explained. See Hegel, *Logic,* I. and II., pp. 120-177.

[3] Fichte, *Wissenschaftslehre,* trans., pp. 159 and 275; Hegel, *Logic,* II., pp. 57-62.

[4] Fichte and Hegel, *ibid.* On Hegel's Principle of Contradiction, see J. B. Baillie, *Hegel's Logic,* 1901.

VI. *If any two entities are inseparable, they in some way form a unity.*

From these assumptions we can now draw certain conclusions:—

Experience gives as a *datum* the *manifoldness* of the "things" experienced, and therewith, also, the individuality of each entity in its distinctness from others; *i.e.,* as regards the *individuality* of *any* entity *A,* any and all other entities are experienced as *non-A.* From this experience there is *derived* not only the generalization, that, if *A is, non-A* also *is,* but also the principle (whether justifiably or not, is a question) that, if *A* is, *non-A must also be.* But *many* entities are experienced—in *many* relations. Yet, whatever the specific character of the relation may be, nevertheless, since a relation by its very nature holds between at least two terms, each of which is that particular individual term, and *not the other,* or *another* term, all other relations rest on the specific relation of contradiction, *A R non-A.* But this relation is one of necessity, *i.e.,* it is one whereby *if A is,* also *non-A must be, or, if non-A is, also A must be.* But this means, that, since *A* and *non-A* are inseparable and therefore form a unity, *any and all related terms* are also inseparable and form a unity—whatever the specific character of either the terms or the relations may be.

This is the key to the *logical* derivation of Objective Idealism. There *are* many "things" and many relations. But, whatever the relations and whatever the "things" may be, all other relations and all other "things" can be "translated" into the "form" of, and are based on, the *relational complex, A R non-A.* In this complex, each term necessitates the other, the two terms are inseparable, and "somewhere" in the complex there is *absolute unity.*

The question next arises, *"Where" is this unity*—or, what is *its locus?* And the answer is, that the *unity* cannot be at the *"level"* of *A* and *non-A,* since they are *two, i.e., many,* and not one. Therefore the *unity* must be at a "level" that is *distinct* from the "level" of the manifoldness, *A R non-A,* and that may be figuratively described as either "underlying" or "transcending" such a level.

In critical comment on this argument it should be remarked that that particular phase of the *principle of contradiction* which the argument employs is one that is only *formal,* and, therefore, one that involves no overwhelming difficulties or damaging consequences. "Contradiction" has been previously examined,[5] with the result that it has been found to mean, or to be identical with, *exclusion.* In the case of *terms* this "condition" or relation obtains, if the terms are the correlative *species* (or individuals) of a (common) *genus; i.e.,* it is such species (or individuals) that exclude one another into some kind of distinct *loci,* and that are, therefore, contradictions. For example, while in reference to red, not-red denotes everything else than red, nevertheless, among these other "things," it is only *other* colors that are *excluded* from coexistence with a particular specific red that exists at a particular time and place. A particular red can, however, *coexist* with a particular specific extension, solidity, smoothness, and the like. None of these characteristics excludes the others, and yet each in its *individuality* is different from each of the others, and these others in relation to any specific one are *not* that one, and are, thus, *its* negative. Accordingly, if this negative is interpreted as a contradictory, it is merely a *formal contradictory,* and as such a contradictory that is quite harmless.

It is evident, therefore, that Objective Idealism, in deriving *a theory of relations by which to interpret all relations,* especially that between *the knowing* and *the known.* employs a special phase of the principle of contradiction, namely, one that is only *formal.* The plurality of the "things" of the universe is a fact, and all other "things" in reference to any one positive "thing" can be *characterized negatively. But the experience of the positive "thing" precedes its negative characterization,* and this latter step really takes us no further than does that upon which it depends, namely, upon the empirical, matter-of-fact experience of *a plurality of different "things."*

Nevertheless, the negative characterization is made to go much further by this *Hegelian development of the traditional logic,* and by the Idealism that is based upon this. That which is a *positive* "thing" is *made* a *negative* one that is to be *necessitated* or implied by, and that is also to be *inseparable* from, that which is *another* positive "thing." Therefore, any term with its negative is held to form an *unimpeachable unity,* so that, *if there are two terms which are inclusive of all positive fact, an all-inclusive unity is easily derivable.*

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[5] Chap. XVI.

To attain to *such a unity* is, however, the chief motive of Objective Idealism, and, by the argument thus far offered, one seems to be far on the high road to success. Indeed, the presentation of the next step in the argument will make it seem that the goal has been reached, and that, finally, there stretches out before the eye of the intellect the panorama of a universe that in the midst of its manifoldness is *Absolute One.*

To obtain this view it suffices, if possible, to find a *pair* of terms which not only necessitate each other's *being* and form a unity, but which also are *all-inclusive, i.e.,* are inclusive of all that is fact. At first sight any pair of contradictory terms, as, *e.g., A* and *non-A,* or *this pen* and *not-this-pen,* might *seem* to be and may *in fact* be such a pair. Yet there is the objection to this possibility, that, over and above the two contradictory terms of *such a pair,* there is always a third "something," namely, a *knowing* or *cognition* (of the pair) *that is not included by those terms.* Accordingly, in order to arrive at a pair of terms that is *absolutely all-inclusive,* it would seem to be necessary to take, not any pair of contradictories, such as the pair, *this pen* and *not-this-pen,* but only such a pair as will also include *knowing or cognition.*

However, *knowing or cognition* may itself, in any specific instance, stand in the relation of object, or *"thing" known,* in or to a specific knowing, as is illustrated by the series, *I know that I know that I know* that, *e.g., A* necessitates *non-A.* Seemingly, therefore, in order to arrive at a pair of contradictories that is absolutely all-inclusive, *one* of the terms of the pair must be, not merely *any* knowing or cognition, but only a knowing or cognition that is never object, and thus always only subject. Such an entity would, however, seem to be the term *knower,* since, in any specific act of knowing, the *knower* would seem never to be *the known,* the subject never the object.

This recognition that there is in the case of the series, *I know that I know, and so on,* a *knower* that is not "at the same time" *a known,* is very evidently only a special phase, again, of that ego-centric predicament which is always so basic for all Idealism. Evidently *knowing* is itself no exception to the rule, that known objects are in relation to a knowing. However, that very special phase of the *predicament* which is emphasized and used by Objective Idealism in its basic argument is, that in *the knowing situation* there is always present one term, namely, the *knower*, which, since it as such is never *the known*, forms, together with the known, *an all-inclusive pair of terms.* This pair is, *knower* and *known*, or, negatively, *knower* and not-knower, self and not-self, and the like. Accordingly that special phase of the ego-centric predicament which is thus emphasized may be stated in the form of a postulate, that

VII. *The specific relational complex which is identical with the pair of contradictory terms, subject and not-subject* (*object*), *or knower and known, or self and not-self, or ego and non-ego, is inclusive of all that is reality.*

From this postulate, together with the other postulates, the demonstration, that *the universe is One* as well as many, is quite without difficulty.

Contradictory terms necessitate each other's *being*,—are, therefore, inseparable,—and, therefore, form a unity. But the unity must be at a different level from that of the terms, since these are *two.* But, also, self and not-self (and the like) are a pair of contradictories that "include" the *universe.* Therefore, for this pair, and so for the *universe* there is a unity,—an Absolute Unity—that is implied in the very "essence" of the relationship between the terms, and that mediates that relationship.

Such a demonstration[6] is identical, briefly, with deriving con-

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[6] This demonstration is found in Fichte all through his *Wissenschaftslehre*, Werke, Vols. I. and II. It is repeated in many forms and ways, and one reference is as good as another. It is also found in Schelling, *System des transc. Idealismus*, Werke, III., i., p. 600, but especially in "Vom Ich," Werke, I., i., § 10, p. 190; in Hegel, *Encyclop.*, § 194 *et seq.*, Werke, Vol. VI., and in the first two books of the *Logic;* in Schopenhauer, trans., *The World as Will and Idea*, pp. 142-146.

As further confirming the writer's position that this derivation is the essence of Objective Idealism, the following quotations are given:—

The first quotation is from the English philosopher, T. H. Green, Works, Vol. III., p. 45. Green says:—

"To assume, because all reality requires thought to conceive it, that therefore thought is the condition of its existence, is, indeed, unwarrantable. But it is another matter, if, when we come to examine the constituents clusions from the *underlying-reality* theory of relations as applied to such specific complexes as *knowing* and *known*, self and not-self, which are inclusive of all that the universe is, *not excepting the knower* to whom that universe is related in the situation of its being a *known* universe. Accordingly, it is *either* from those *postulates* which have thus far been made, *or* from the *underlying-reality theory of relations* which those postulates form, or to which they lead, that, together with the all-inclusive pair of related terms, *knower and known* (not-the-knower), it seems to be possible to demonstrate with absolute logical rigor *that the whole universe is Absolute One.*

This conclusion is identical with one result which it is the dominant motive of Objective Idealism to obtain, and forms one necessary step in the demonstration, which Idealism would make, that the universe is ultimately spiritual in character. Nevertheless, it is a conclusion that is itself not sufficient to establish this position, since the proposition *that the universe is Absolute One* does not imply that it is also spiritual.

Accordingly, in order to demonstrate that the universe is of this specific character, it must be shown, if possible, that the only instance of a oneness which holds together a manifold of related terms (themselves possible manifestations of such a *one*) is a self, a knower, or a spiritual being. If this demonstration can be made, then, by stating this sole condition in the form of *a specific postulate*, it is possible logically to develop Numerical Monism into Objective Idealism. Yet, on the other hand, if this demonstration cannot be made, *i.e.*, if one can find other instances of an absolute oneness in the midst of a plurality, *e.g.*, a material substratum in the midst of physical properties, then

of that which we account real, we find that they all imply some synthetic action which we only know as exercised by our own spirit. Is it not true of all of them that they have their being in relations; and what other medium do we know of but a thinking consciousness in and through which the separate can be united in that way which constitutes relation? We believe that these questions cannot be worked out without leading to the conclusion that the real world is essentially a spiritual world, which forms one interrelated whole because related throughout to a single subject."

The second quotation is from the English philosopher, Edward Caird, who says, in his *Evolution of Religion*, p. 67:—

"Subject and object are the extreme terms in the difference which is essential to our rational life. Each of them presupposes the other, and therefore neither can be regarded as producing the other. Hence, we are some other form of Monism is as readily derivable as is Objective Idealism.

From this it becomes clear that whatever more specific philosophies are developed from the postulates and conclusions thus far presented, depends, not upon discovering the further implications of those postulates and conclusions, but upon making further specific, independent postulates. Such postulates concern either the nature of Absolute Oneness as such, or, if this Oneness is assumed to be spiritual in character, because the ego or self is regarded as the best example of it, they concern and must assert some specific characteristic as the dominant phase of that which is spiritual. Accordingly, just as Idealism is derivable from generic Monism on the assumption that an Absolute One can be only spiritual, so also are such specific philosophies as Theism, Pan-logism, and Ethical and Romantic Idealism derivable by *assuming* the dominant character of the

compelled to think of them both as rooted in a still higher principle, which is at once the source of their relatively independent existence and the all-embracing unity that limits their independence. To put it more directly, the idea of an absolute unity, which transcends all the oppositions of finitude, and especially the last opposition which includes all others—the opposition of the subject and object—is the ultimate presupposition of our consciousness."

A still more striking statement is made by Professor Mary W. Calkins in her *Persistent Problems of Philosophy*, p. 418 f.; Professor Calkins' formulation of the argument for Absolute Idealism is:—

"I. Ultimate reality is no absolute plurality; it does not consist in a plurality of utterly disconnected units. For we directly experience relations and connections; every one of these supposedly discrete, distinct 'units' is both comparable with and dependent on other units: it implies others in being itself distinct, and it is connected with others by virtue of their all existing."

"II. But ultimate reality is, therefore, no mere manifold of units which are both distinct and yet related. For absolute distinctness and relatedness are mutually exclusive predicates. If the units remain entirely distinct, they are, then, distinct from the relations as well as from each other; in other words, the relations themselves become mere unrelated units. So long as the units are, by hypothesis, distinct, so long the supposed relations fail to relate. But relation is experienced, it is immediately known to exist. Hence the alternative, entire distinctness, must be abandoned. There results the conception of ultimate reality, not as mere including system, but as relater of its parts, not as mere one-of-many, but as unique Individual. Each one of us has in his consciousness of self the example of a unique being which is a one-of-many."

"III. The conclusion that ultimate reality is an Absolute,—that the irreducible nature of the universe is self,—gives, as the final outcome of philosophy, the conception of ultimate reality as absolute self."

Another example, making practically the same explicit presentation of points as does the preceding quotation, and again illustrating the fallacious procedure just discussed, is found in Taylor's *Elements of Metaphysics*:—

Spiritual One that underlies the universe to be God, or Intellect, or Conscience, or Life.

It is, then, to the examination of these more specific Monisms that we now proceed.

One specific Monism is derived by finding, among the many entities that experience reveals, a specific and *certain concrete instance of an entity that is an absolute one*—simple, undivided, and indivisible—and that is not merely an organic whole, which, while it is one, is also many. Such an entity, it is maintained, is given in the instance of *the unity of the personality, of the ego or self,*[7] *or of the soul.* For, it is maintained, while the manifold of ideas, emotions, acts of will, and the like, come and go,—appear and disappear—the personality, the self, the ego remains. Such a persistence of the personality, or of the self,

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"We may conveniently attempt to construct our own theory of the One and the Many by first excluding views which appear mistaken in principle, and thus gradually narrowing the issues. Among these mistaken views I am forced to reckon all forms of consistent and thoroughgoing Pluralism. Pluralism begins by misapprehending the facts upon which it professes to base itself, and ends by giving an interpretation of them which is essentially irrational." "Any genuine Pluralism must be resolute enough to dismiss the idea of a systematic interconnection between its independent realities as an illusion of the human mind."

"We seem driven, then, to reject the view that the ordered world of experience can be the expression of a plurality of ultimately distinct and heterogeneous principles. Because the world as known is an orderly system, and on any other supposition coherent knowledge is impossible, the world must be regarded as the complete embodiment and expression of a single ultimate principle."

"The world for knowledge must be an orderly whole or system. To be a system at all, it must be the development or expression in detail of a single principle. Therefore it must most certainly be one. But again, because it is a system, it cannot be a mere unit; it must be the expression of a single principle in and through a multiplicity of terms or constituents. To think of the world as a single systematic unity, then, means to think of it as a manifestation of one perfectly determinate principle."

"We may take a further most important step forward. In the all-embracing systematic whole the unity and the multiplicity must be equally real and each must be real through the other. How is this possible? Only on condition that the whole system forms a single experience and that the constituent factors again are single experiences." "It would be much the same thing if we called it a subject which is the unity of subordinate subjects." Chap. II., pp. 87-99, *passim*.

All these quotations were first given in my paper, "The Logical Structure of Self-refuting Systems," *Phil. Review*, Vol. XIX., No. 6, pp. 610-631.

[7] *E.g.*, all through Fichte's *Wissenschaftslehre* (see the translation), also in Kant's doctrine of the transcendental ego, and in Berkeley's position that the spirit is numerically single (see Chap. XXX).

is held, further, to be explicable only on the ground that the self is an *absolute one,* and *not many*—even *as* an organic whole. For, it is argued, that which is *many* can be disintegrated in respect to its manifoldness and cease to *be.* And, further, it is contended that the absolute unity of the personality, of the ego, or of the self, is given to introspection as an immediate, undeniable fact.

From such an instance of an absolute unity in the midst of plurality—a unity, also, that binds the many together into one—the argument is readily obtained, that, if the universe can be proved to be an *absolute one,* as well as many, then *this oneness must also be of the nature of personality, or of self.* For, it may be inquired, where else is a concrete instance of absolute oneness discoverable? Is not the self, the ego, the only instance of this that comes to our experience?

In comment on this argument it may be inquired, whether it is not possible that the view, or even the experience, that there is an absolutely unitary self, ego, or soul, is not itself a *product of the same tradition* [8] that results in the view *that the universe is absolutely one.* In other words, may there not be a tradition in which there is borne that logic which demands absolute oneness in the midst of plurality, and which leads to the *interpretation* of *one* instance of such oneness, as demonstrable for the *universe, by analogy with another instance,* originally demonstrable, *e.g.,* in Plato—but later incorporated in the tradition as orthodox belief and even self-evident fact as regards the nature of the self.

Whether this inquiry be answered with "yes" or with "no," it is, nevertheless, an historical fact in the development of philosophical theories, that for the interpretation of the nature of the unity of the universe, recourse has been had to an ego, a soul, or a personality that is itself regarded or experienced as absolutely unitary, and as uniting the manifold of the experiences of each personal life into the continuity of a single flow. Indeed, is not this the only "thing" that such a *One—of the universe*—could be? For, does not the realm of physical entities, as known by modern science, fail to present an analogy that serves such a purpose? For example, atoms are, at best, only either *organic unities* or mechanistic *systems* of electrons, and *one* electron does not unite others—the atom being only *the unity of electrons in relation,* with no empirically found entity, *over and above the relations,* to mediate their unity in an atom. Quite the same "state of affairs" holds also for molecules, particles, cells, organisms, and the like. These are unities, but in so far as they are this, their unity is found empirically to consist in their *organization* and the constancy of the relations that generate this organization, and not in the mediation of an absolutely simple and underlying one. Therefore, if appeal is made to the realm of *physical entities* for a basis for the analogy we are seeking, the only possibility of success lies in the instance of *the particular physical thing* as this has been defined in the tradition and is accepted in common sense even today—namely, *as a unitary substratum in which qualities inhere.* To interpret the Oneness of the Universe after this analogy results, however, in what is termed Materialism—a position that usually arouses only the most vehement abhorrence. And yet it may be asked, What, logically, is the difference between *this* position, which finds a single *substratum* to the universe, and calls it Matter, and that position, which, though calling itself Idealism, finds a *psychical substratum* to the *universe* on the ground *of an argument that springs from a tradition in which the physical thing has been the dominant influence on philosophy and logic?* For, as we have seen, it is *the physical thing, defined as a substratum in which qualities inhere, that dominates the Aristotelian tradition,*[9] and, accordingly, also, *the views that develop in this tradition,* particularly the views that in the human personality there is a substance-like self or ego, and, in the universe, a substance-like One,—with this One interpreted after analogy to the human soul. If such a philosophy—of a world substratum—has this origin, then, although it be called Idealism, does it differ logically from Materialism, and does the function of its one universal substratum differ from the function of that substratum which Materialism also finds for the universe?

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[8] The Aristotelian, with its model of the physical thing defined as a unitary substratum in which qualities inhere.

The answer is obvious. And yet it is maintained by many—as well illustrated by Berkeley—that the material substratum of the physical thing is not so *certainly* given to sense experience as is the spiritual substratum of the finite self given to reason and to introspection. Therefore, with it demonstrated that there is a Oneness—a Substratum in the Universe, this is interpreted after the analogy with the *latter* rather than with the *former* possibility, so that the One Substratum of the universe, whose function it is to hold all entities together, and to mediate all relations, is inferred to be a World-Soul, or World-Self, that is *psychical,* and not material or physical in nature.[10]

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[9] Cf. Chaps. III. and XXVII.

CHAPTER XXXVI

DEVELOPMENTS OF OBJECTIVE IDEALISM

I. THEISM AND PANTHEISM

BUT, with the conclusion of the foregoing chapter once reached—*logically,* as just presented, *historically,* through the alliance of philosophy and theology,—there lies ready at hand, as suggested by the dominant interest of the religious consciousness, the further specific conclusion, that a World-soul, World-self, or World-personality *is identical with God,* in Whom all "things" in some manner have their *being,* Who mediates between all "things," thus, perhaps, to insure order, design, and purpose in the universe, and Who is identical, in the highest degree, with that to which we ascribe highest worth, namely, *personality.*

With this conclusion once reached, Objective Idealism is, however, in a position to become the orthodox apologetic for Christian theology, notwithstanding that its tendency is away from Theism and toward Pantheism.

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[10] This is essentially the position of all the objective idealists, although there are minor differences as to whether such a Being is personal or impersonal, etc. See, *e.g.*, Hegel, *Logik,* Werke, III., I., Chap. I.; *Encyclop.*, Chap. IV., § 51; *Phil. of Religion,* trans., III., p. 355 *et passim.*

Theism is the position either that God is *apart* from the universe, or that, if the universe *is* God, He is more. For the first kind of Theism, God is either the *creator* of the universe, or its *designer,* or at least an active, concrete principle in it that "makes for righteousness"; for the second kind of Theism, God is *immanent* in the universe, and yet is of a *different order* of reality from the universe, in that He is both the *mediator and relater* of its parts, and the *essence* of these parts in which He manifests Himself, although always as a great *reserve source* which is more than its manifestations. Yet, if we raise the question, *How* God can *thus manifest* Himself, the answer takes us in the direction of Pantheism. For, if God but orders and relates things that exist *apart* from Him, then is He at best only a designer and mechanician; also, "things" are related to Him, so that we again have the problem of the *mediation* of this relatedness. Also, if God is regarded as the *creator* of the universe *ex nihilo,* then is our power to conceive this baffled. For, how can something be "made" from nothing? And if it cannot, then must God's *creation* be but His *manifestation* in the sense that this is identical with an *emanation* from and a *transformation* out of Him, with the result, not only that He is *relater* and *designer,* but also that He *is* all "things" and that all things are God.

This position is Pantheism. Into it Theism very naturally and very logically develops. But, underlying both these theological positions are the fundamental logical postulates on which Objective Idealism is based, namely, that terms in relation demand and imply a *unitary being* which transcends, yet manifests itself in the terms, and mediates the relations between them. Such a unitary being is, in the specific Monism under consideration, first identified with a World-self, or World-personality, and then with God, with the logical result, that *all "things" are psychical or spiritual in character*—even those that seem most persistently to withstand such a "reduction," as, *e.g.*, do the entities of the *physical* universe.

II. PANLOGISM AND ETHICAL IDEALISM

Conclusions very generally similar to those just presented are found in a number of other monistic psychisms that differ in respect to what is accepted as the dominant character of the Absolute One, while, in turn, what is regarded as such a character is conditioned by the position that is taken as to what is the fundamental character of the finite human self; *i.e.*, according as this finite self is found to be predominantly an intellectual and *logical* self or ego, or an *ethical* being that follows the dictates of conscience, or, possibly, a *beauty-desiring* soul, so is the Absolute Self regarded as being predominantly one or the other of these characteristics. Thus, *e.g.*, it can be demonstrated—by analogy—that that Being which is the One of the universe is primarily *an intellectual Being, the logical laws of whose mind are the basic principles of all that exists and subsists.* This specific form of Objective Idealism is *Panlogism.*[1]

But also, by a different specific analogy, it can be demonstrated that the One is predominantly both a *conscience* that inherently respects the principles of *right,* a *will* that purposes and contrives to accomplish ends, and an *intellect* that adapts means to ends.[2] By thus appealing to the analogy of the finite self or ego, and emphasizing the ethical consciousness as the fundamental feature of this ego, the psychical monist is able to maintain that *the universe is an ethical system,* the fundamental laws of which spring from or are identical with the dominant *ethical* characteristics of an absolute Ego.

The argument for such an absolute ethical Idealism is sometimes buttressed by an appeal to Phenomenalism. This philosophy, as we have seen, *tacitly* makes the *finite self* a *psychical substance* that is in causal interaction with things-in-themselves, the logical outcome of this assumption being, that *knowing modifies the object-to-be-known.* Yet, *inconsistently* with this implied result, Phenomenalism maintains that the nature of the finite self is quite *knowable,*—namely, by means, first, of discovering those principles which we *must* think, and then, secondly, of accounting for this necessity on the ground that such principles are identical with the *finite self's own inherent nature, which nature it cannot contradict.* These principles, in accordance with which we must think, are ways in which we relate "things," and *it is by virtue of relations that the universe is a system.* Briefly, therefore, in accordance with Phenomenalism, the *system of the universe presupposes an ego* which thinks in accordance with certain principles which are the laws of the ego's own nature; or, conversely, a *substance-like* ego, thinking in accordance with its own nature, *relates otherwise unrelated* "things," and thus makes the universe a system.[3]

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[1] The position, *e.g.*, of Hegel, Bradley, and, I should say, of Royce.

[2] Fichte, Münsterberg.

Let us, now, from the standpoint of this position, and with the main argument for Objective Idealism still in mind, inquire what the universe would be, *if* there were *no* finite egos. Would it not be *only a chaos,* or a mass of *unrelated* "elements"? Let us next *assume just this chaos,* and then ask, Whereby would such a chaos *become a cosmos?* The answer to this inquiry is evident. It is, namely, that, with a *cosmos* depending on *knowing,* or on a knower, and with it quite *conceivable, e.g.,* from the standpoint of the empirical sciences, that no finite knowers should exist, *there must be* a trans-finite, or infinite, absolute *knowing* or knower, who relates all the otherwise unrelated terms of the universe, and in whom the principles of such "relatednesses" inhere, even as the qualities of a physical thing seem to inhere in a material *substratum.*

Untrue, then, to its criticism of Phenomenalism, namely, that this position implicitly *presupposes* the possibility of genuine knowing, and yet explicitly denies this, Objective Idealism uses the phenomenalistic doctrine, that the ego or self is *relater,* in order to demonstrate that the Absolute One is an *intellectualistic or logical ego* whose function it is both to mediate all relations and to relate.

This position is very modern *monistic* and *idealistic* doctrine.[4] It is maintained, that *to know is to systematize,* and then, from the facts (1) that the universe is a *system—a cosmos,* and (2) that finite egos are conceivably non-existent, the conclusion is derived, that the *system of the universe implies an Absolute Ego or Self, that is Absolute One.*

In criticism of this argument, it may be said, that while it may be granted that the universe is a system, the monistic conclusion just presented follows from this admission *only on the condition that a certain specific assumption is made, namely, that, if terms are in specific relations to one another, the fact of this relatedness implies a transcendent, unitary, and mediating being.* Without this postulate, and *with an opposed postulate,* the monistic conclusion does, however, not follow. For, granted that the universe is a system, and, therefore, a manifold of *terms in relation,* then, whatever specific type of system the universe may be, it is quite possible, that *relations* themselves "do the work" of uniting terms, and *furnish the universe with all the unity that it has.* This unity, and, therefore, the system of the universe may be any one of those types that are distinguished as, *e.g.*, organic, causal, continuous, discontinuous, and the like, without being an absolutely simple One. That the universe is such a One follows only from a specific postulate. But this postulate is one that is not only not necessarily true—although it may be true—but that is also open to the criticism that it is *self-contradictory* in its implications, as we have previously seen.

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[3] For this position see Joachim, *The Nature of Truth,* pp. 78, 114; T. H. Green, *Prolegomena to Ethics;* Watson, *The Interpretation of Religious Experience;* Taylor, *Elements of Metaphysics,* Chap. II., § 4, *et seq.;* Royce, *World and Individual,* p. 341 f.

[4] See note 3; also the quotations given in Chap. XXXV.

In further criticism of the argument that is under consideration, it may be inquired, whether the position that all terms or "things" would be unrelated were it not for the agency of an Absolute One to relate them, *does not itself presuppose* its contradictory; *i.e.*, does it not presuppose (1) that, before such a One could exercise its activity in relating, "things" would be *distinct* from it, even though "things" are *its* manifestations; and (2) that, as thus distinct, "things" would be either *similar* or *dissimilar* to that which relates them; and (3) that, accordingly, certain relations, namely, those of similarity or of dissimilarity, would be *independent of a relater.* But, if there are *some* relations,—such as these, that are not "instituted" by an Absolute One as relater, other, in fact, *all other* relations may be similarly *independent,* so that, if there be an Absolute One, such a being does not function as the relater of the terms or "things" of the universe.

These criticisms, however, are either ignored or not accepted by the objective idealist who derives his position by the argument that has just been given, and to whom, of course, that argument is quite *convincing*. The result is, that, with it once regarded as established, that there is an Absolute Knower upon whom the system of the universe depends, support for an ethical idealism and monism is obtained from the further phenomenalistic position, (1) that there are *two "worlds,"* the one consisting of interacting things-in-themselves and substance-like, finite egos, the other, of the causal *results* of this interaction, these results being called phenomena, and (2) that phenomena in turn are of two kinds, the one kind being psychical, as the result of the action of things-in-themselves on finite egos, the other kind, *physical*, as the result of the action of finite egos, *with their laws*, on things-in-themselves. Since, now, an effect owes its character both to the "thing" *acting* and to the "thing" *acted* upon, both psychical and the physical phenomena bear the "marks" of such principles as *cause and effect*, necessity, and the like, and in this respect both realms are *causally determined*. But, further, Phenomenalism, although it *tacitly* presupposes the contradictory, *explicitly* teaches the doctrine of the *unknowableness* of things-in-themselves. Accordingly, it infers, that, since these entities are *not known to be determined, they are known not to be determined*, so that, it is further inferred, they *furnish opportunity for freedom*—in the sense, at least, of the absence of causal determination.

Phenomenalism and Objective Idealism both make use of this conclusion in order to establish an Ethical Idealism.[5] For, it is argued, that, on the one hand, to hold a man responsible and justifiably punishable for his acts, is impossible unless he is free; but, on the other hand, as a member of both the psychical and physical worlds in which every event is *caused and determined*, a man is not free; his every motive, every act, every apparently free choice is, in reality, *only the causal result of previous acts* and, finally, *of heredity and environment*. This is the conflict. On the one hand there is the ethical demand that man shall be free, while, on the other hand, there is the naturalistic conclusion, that man is in all respects only a link in a inflexible causal chain of heredity, environment, and previous growth and development.

This problem is regarded as solved by the phenomenalistic hypothesis, that, if man is a member of two worlds, namely, those of things-in-themselves and of nature, then freedom may exist in the former, causal linkage in the latter, with the scientific knowledge of the "world" demanding this (causal) determination, and the introspective deliverances of conscience confirming the freedom. For, although the regarding ourselves as free *may* be the hypostatization of our ignorance of those detailed causes that really compel us to do whatever we do, and, also, although the conviction that we are free, whether this be the fact or not, might have the same outcome in our conduct as would real freedom, and be quite as valuable ethically, nevertheless it is a fact that our introspection tells us that we are free. Conscience implies free action, and this in turn is found only in the realm of things-in-themselves—for Phenomenalism. Therefore may *this realm* be, in its real essence, of the very nature of conscience itself, known, not by sensation, nor by intellect, but in moral consciousness and feeling.

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[5] Fichte, in agreement with Kant; see Chap. XXIX.

Then the interesting question arises, if the Absolute One, Mediator of all relations, Manifestor of all appearances, Source of all those results which are mutually dependent upon and relative to one other, Uniter of *all-inclusive self and not-self* in the act and implications of knowledge, *may not itself be of the nature of conscience,* or of an active, vivifying moral law? The answer of the ethical monist to this question is not "may," but "must," and thereby is the easier *argument by analogy* buttressed by this more complicated argument from Kantian Phenomenalism. But, since the position is thus a derivative both of this Phenomenalism and of Monism, it stands or falls with these two positions, and is thereby doomed to failure.

CHAPTER XXXVII

FURTHER DEVELOPMENTS OF OBJECTIVE IDEALISM

I. VOLUNTARISM

If the Absolute One be a self or ego, and if, as a self or ego, it be primarily a conscience, then is it also Will. Thus is Ethical Monism also Voluntarism. *Intellectually*, conscience is that faculty, either complex or simple, to which there are presented ends to be accomplished, means to these ends, and ideals or standards under which both ends and means are subsumed as either good or bad, right or wrong. Emotionally, on the other hand, conscience is that faculty which can only prefer the good to the bad, the right to the wrong, and which is itself the innate respect and reverence for the one, and the abhorrence of the other. This immanent and "natural" *preference* is one phase of choice or will. *Will*, also, is the *act* of *weighing* and *deliberating* over both ends and means, and of then *striving to accomplish* the chosen end by this means or that. Thus it is, that conscience is itself *will* with an emotionally rooted *preference* for the good and the right for their own sake, and with an *intellectual* discrimination between the good and the bad, and between right and wrong means and ends.

This *Ethical* Voluntarism readily allies itself with a second type or more extended form of Voluntarism that has its motive in the *dynamic* doctrines of modern science, while these doctrines are in turn supported by *dialectical arguments*, derived from the Aristotelian logic, by which the *logical necessity of change and evolution* is demonstrated.

In developing this more extended Voluntarism, appeal is made to the fact, that, although in comparison with acts of will, intellectual acts and emotions are, perhaps, revealed by introspection as relatively statical, this, nevertheless, is only comparatively the case, since modern psychology shows that all empirically given consciousness is *concretely an act or process*. This is quite generally agreed to, whether or not it is further held, that there is a *static* ego or self which unites the manifold of conscious processes into *one* personality. But, *in acts of will* we discover a resistance to be overcome, a push or a pull against either our better nature, *or* against our appetites and desires, and, also, a counter push or pull, with *actions* finally emerging. Here, therefore, is *force,—energy,* here is *vis viva revealed at first hand.*

Most suggestive of further hypotheses now, is the view, that such a source is that from which our knowledge of the *dynamic* springs, and that, with this as an analogy, men have been unconsciously led to suppose that *nature itself is identical with change.* But, even if this be the origin of our knowledge of change, it does not follow, that nature is *not really* of this character, but is only *thought* to be such by man. For the *esse* of "things" is not, of necessity, identical with the mode of its discovery, unless one accept the fundamental premises of such positions as Phenomenalism, Subjectivism, or Humanism.

However, modern science takes this dynamic view, whatever interpretation may be given to it. Thus, *e.g.*, in the field of *physical* existents, science holds that *all is energy,* either in the *equilibrium* of action and reaction, or of *change* when the one force is the greater, the possible exceptions being those ultimate parts, such as atoms or electrons, out of which specific energies are made up, although even such seemingly ultimately statical entities may be only equilibriums between *dynamic forces.*

The *psychical* life is, perhaps, even more evidently one of change and push and pull, *with,* possibly, not even the same probability of *unchanging entities* such as seem to exist in the physical world, or which the physical world presupposes. For example, *space and time* do not change, although "things" in them may change. Voluntarism, however, neglects these refinements, and, also, in its appeal to evolution, is not troubled by the fact that, if all "things" are held to evolve, this supposition is contradicted by the implied fact, that the *principles of evolution* and of change do not themselves change, but are *invariants.*

The theory of evolution holds in a crude way to the continuity of the development of higher plants and animals from lower forms, and this evolution is held to extend *upward* until it brings the flowering of a fully deliberative will as the crowning glory of nature's inherent creative impulse. But, *downward also* does the continuity extend so as to include the impulsive acts, the instincts, the tropisms, the chemical and physical reactions and events, and, finally, the so-called inorganic processes. Accordingly the question arises, Shall the higher partake of the nature of the lower, the complex be like the simple, or conversely? But, we may also ask, What matters it which hypothesis we choose, since there is *continuity* between the two extremes, and each extreme must resemble the other?

For the modern voluntarist this evidence from evolution counts for much, indeed its weight tips the scales in favor of the inference, that *"the lower" is like "the higher,"* rather than conversely. For, it is asked, Do we not get our first-hand knowledge of force, of energy, of change, *from the higher* by an absolutely reliable introspective knowledge of ourselves, whereas the innermost essence of the life of the lower animals and of all plants, and of the processes of the inorganic physical world is concealed from us by the coat of many colors—appearances? Also, must not the lower *contain* that which the higher reveals in order to account for the higher realities? For example, must not "the lower" *be or contain will and consciousness,* in order to account for will and consciousness in higher forms, especially if evolution is continuous? And yet, if *will* is present at such lower "levels," *e.g.,* in an amœba or in an atom, it is, nevertheless, not a deliberative will, but a will that is blind and impulsive, dogged in its urgings, ever unsatisfied in its attainment, and, perhaps, ever creating new desires, and, therefore, ever new suffering.

Like in kind, therefore, would be the higher and the lower, like, that which seems to be as different as are the physical and the mental, like, the near and the remote. But *like they must be,* not only because, as evolution teaches, each is continuous with the other—roughly so at least, but also because each is but the upspringing of an Absolute Will that is their creator, their relater, and their *inner nature.* Thus is the position taken, that the *essence* of physical force and energy is *will,* and the essence of will, energy, *urging,* on-pouring.

This is modern Voluntarism, an offshoot of Ethical Monism. The gap between it and Naturalism is not wide, since to bridge this gap, one has but to identify the Absolute One of Monistic Idealism with an Energy whose inner nature is Will. But whether energy be *will,* or *will* be energy, is, perhaps, an option to which the concrete happenings of the universe are *quite indifferent* as long as the Ultimate One plays only the function of manifesting itself in and of uniting all concrete "things" as they are found empirically. For, on the one hand, if will be energy, as the materialistic monists claim, then the world is a *deterministic* system, and there is no opportunity for *teleology* in any other sense than that of mere direction and irreversibility, while, on the other hand, if energy be will, yet a will that merely underlies and relates *determined* empirical happenings, then, also, is there no *teleology* in the sense of a purpose that is aimed at, and of means that are varied to its accomplishment.

It is, however, the seeming *opportunity* of making determinism merely *apparent,* and thus of finding a fundamental ontological basis for a genuine, universal *teleology,* that chiefly actuates the modern voluntarist. For, if energy be *will manifesting* itself in the inorganic world, and especially in the realm of plants and animals, then there certainly does seem to be opportunity for an *immanent teleology,* with the result that the *conflict* between the act that is *both determined and purposeful* seems to be removable by putting *the causal determinism* into the world of *appearance,* and the *purpose and freedom of action* into the realm of ultimate reality, namely the Universal Will. Thus it is that in modern Voluntarism there is still retained the contrast of the Kantian Phenomenalism between a realm of appearances and a realm of ultimate realities (things-in-themselves), with determinism in the former, and purpose and freedom in the latter realm. Indeed, all Monism, especially all Objective Idealism, emphasizes this contrast between the realm of related terms as *appearances,* and the reality of the Ultimate One that relates these.

As regards their "practical outcomes," however, there is a striking contrast between Ethical Monism and Voluntarism; for, while the former is essentially a philosophy of optimism, the latter readily becomes a theory of deeply grounded pessimism.

The One of Ethical Monism is held to be primarily *a moral self* that is the active, living principle of right and justice in the world, although that such a being cannot consistently be inferred to be of this character, we shall discover shortly in our criticism of Objective Idealism. However, this criticism is not accepted by the adherents of the position. Rather, their philosophy is held both to demand the conclusion and to support the conviction, that *all "things" work together for good.* The One that mediates *all,* and that *is all,* is a *moral entity.* Therefore, by that narrow meaning of the term with which Ethical Monism identifies the *moral,* all "things" must be in their essence good, and all evil must be but mere appearance.

Voluntarism, however, does not, at least as it has been historically developed, incline to this optimism. Rather, the *will* of Voluntarism is interpreted more in analogy to those somewhat blind, instinctive and impulsive willings that impel us to anger and to wrath, and then to regret and to sorrow, or to desire, and then, following upon satisfaction, *to still further* desire, and accordingly to no final satisfaction. Thus it is that Voluntarism becomes a philosophy of unfulfilment and of ever returning unquenchable longings and willings. Yet in this flux we continue to "will to live,"[1] and, as a means of living, to will to have power and to conquer.[2] Yet what deeper ground for pessimism than to *be* a will that forever flows and surges into ever new longings and ever repeated disappointments?

Voluntarism is based in part on the scientific and naturalistic doctrine of the evolution and change of all "things," but when further support is needed, it accepts this from whatever sources are available,—even from opposed theories. Accordingly, Voluntarism brings to its aid a theory of the *logical necessity* of change and evolution. This theory arises in the development of the Aristotelian logic, and is closely connected with the argument for an Underlying One. In fact, just as this argument deduces, from every term's implication of a formal contradictory, the *unity of the two terms, and the underlying locus of this unity, so logical evolutionism deduces, from the implication of a formal contradictory, the necessity of change.*

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[1] Schopenhauer (1788-1860), collected works ed. by Deussen, 1911 ff.; translations: *World as Will and Idea,* by Haldane and Kemp, 3 vols., 1884 ff.; *Fourfold Root and Will in Nature,* by Hillebrand, 2nd ed., 1891; *Basis of Morality,* by Bullock. Cf. Sully, *Pessimism.*

[2] Nietzsche (1844-1900), col. works ed. by Koegel, 1895 ff.; English trans. by A. Tille. See especially *Jenzeits von Gut und Böse,* and *Zur Genealogie der Moral* (*Beyond Good and Evil,* and *The Genealogy of Morals*).

In order to make this demonstration *one argues,* that *change* as empirically discovered can only mean logically that *A* becomes *B, i.e., non-A,* where *A* and *B* are *things.* If, now, when *A* becomes *B,* there is merely an *A* at one instant, and a *B* at another instant, no especial difficulty may seem to arise. But this is only because certain *problems* are ignored. For there *is* the problem as to *how* a thing, *e.g.,* an *atom* of carbon, or an electron, can cease to be itself, and *become* something else. But there is also the problem, as to *how,* if such a *becoming* seems to be an empirical fact,—as it does,—this "ceasing" to be one thing and "becoming" another thing can be rationally understood—indeed, *how* it can be rationalized at all. For, although it *seems* to be readily ascertainable that a thing, *e.g.,* a piece of ice, can be *now A,* and *then B,* or *non-A,* at instants that are somewhat remote from each other (the *ice* can become *water*), it is difficult, if not impossible to understand the implied fact, that, *at some one instant* the real transformation takes place (*e.g.,* the ice melts), so that a thing is *both A* and *non-A* at the same instant (the water both solid and liquid).

Change, therefore, presents this specific problem as to how *contradictory* attributes can coexist at the same instant. And the solution to this problem is, that they can not, except in *appearance.* For, on the ground of the principle of contradiction, that *a thing can not both be and not be* (a certain quality or property), whatever seems to involve the contradiction of being both *A* and *non-A* must be inferred to be only *appearance,* while *reality* must be inferred to be that which does *not* change.

The essence of change is, therefore, the self-contradictory *state of affairs* of *A* and *non-A* coexisting at the same instant. But this state of affairs is an instance of *logical necessity,* in the sense, as we have already seen, that A implies *non-A*.[3] We must conclude, therefore, that *change,* which is empirically discoverable, but which is also self-contradictory, is, nevertheless, *logically necessitated,* although in the realm of the *manifold* of appearances, and not as a characteristic of that One which is *the reality.*

However, Voluntarism is not alone in employing this argument in order to demonstrate the *necessity of a universal change and evolution* by which to fortify its position, that all is Will, for other forms of Monism also use it. Thus, *e.g.*, Ethical Monism employs the same argument in order to show that a universal ethical *advance and progress* is logically necessitated, and Intellectualistic Monism, in order to demonstrate the presence of a logical necessity in the sequence, *e.g.*, of the several periods of the development of human institutions. For it can be thus demonstrated, *e.g.*, that the several phases in the *development* of religious beliefs, of the forms of government and of social organization, and of scientific theories, *could have only that order which they de facto have had.*[4] Indeed, every monistic theory can, consistently with its own logical foundation in the *underlying-reality theory of relations,* use this logical evolutionism either as a support or as a supplementary doctrine. For, even if the One is interpreted after the analogy of a physical thing with attributes and a unitary material substratum, the argument for logical evolutionism may still be used, since this argument forms one aspect or corollary of the argument for a single underlying reality.[5] Emphasize the *unity* in the relationship of contradictories, and the conclusion results, that there is an underlying One; but emphasize the implication of the contradictory as identical with the process of one "thing" *becoming* another, and we have the conclusion, *that,* whatever else they may be, *e.g.*, progress, advance, and betterment, or the opposite, *change and evolution are themselves logically necessary.*

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[3] This is the essence, I believe, of the Hegelian doctrine of the logical necessity of evolution. It is found in Fichte, in the *Wissenschaftslehre,* and in Hegel in the *Logic and the Encyclopedia.* See Chap. XXXV., II.

[4] Hegel's *Philosophy of History,* trans. by Sibree.

[5] See Chap. XXXV., II.

II. VITALISTIC AND ROMANTIC IDEALISM [6]

Still another variant of generic Monism is derived by interpreting the nature of the One after the analogy of the *organism*, or of *life*, especially as this is regarded in those specific biological theories that are called *vitalistic*. Such a specific monism may be called Universal Vitalism or Romanticism, and is due, of course, to the influence of the concept of biological evolution and of the science of biology. Such a monism is, also, clearly more *naturalistic* than are those monisms which we have thus far considered, yet it is, nevertheless, a monism that is an *idealism or psychism*, since it is based on a *psychistic* view of the organism and of the nature of life.

One and perhaps the chief characteristic of vitalistic theories in biology is their opposition to, or insistence on the *limitations* of, the *mechanistic* position. The latter position, however, is itself seldom formulated with precision. Sometimes it is defined as meaning merely that the organism is *determined* in all its structures and functions, and that it acts with such a regularity and uniformity that experiments can be repeated and "the same results" again be observed. Also, the position is defined as meaning that all vital phenomena are *identical with mechanistic entities*—without this term (mechanistic) itself being defined. Or, again, the position is regarded as meaning (1) that an organism is a *special instance* of an *organized* complex of physico-chemical forces, even as any such complex is specifically different from others; (2) that, accordingly, the organism has, *as a whole*, specific characteristics, such as reproductive ability, self-maintenance, and selective sensitivity, which inorganic complexes do *not* have; (3) that *such specific characteristics* are *not identical* with chemical and physical forces, with molecules, with atoms, or with electrons, although they *act* in conformity with these *mechanistic* entities.

This last mechanistic position is of such a character that it makes it quite possible to combine both the mechanistic and vitalistic contentions into a common theory, but this possibility has not been generally recognized by either party. Accordingly Vitalism is also advanced in quite as vague a form as is Mechanism, namely, as the negative position or contention that the mechanistic theory does *not* "account for," "explain," or describe the organism *completely*, especially as regards its distinctly *vital* characteristics. In other instances, however, Vitalism is offered as a much more definite and precise theory, namely, as the position, that, while the organism is in part mechanistic, it nevertheless "contains" in every case a mysterious entity called an Entelechy that is itself *non-mechanistic*, although it may with foresight use mechanistic means to its *own special end*—which is *the furtherance of Life*.[7]

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[6] The position taken by Bergson in *Creative Evolution* and other works, and by Eucken in the recent volumes: *Main Currents of Modern Thought*, trans. by Booth; *Problems of Life*, trans. by Hough and Gibson; *Value and Meaning of Life*, trans. by Gibson; *Life's Basis and Life's Ideal*, trans. by Widgery; *The Life of the Spirit*, trans. by Pogson.

It is, now, this second type of Vitalism that has especially appealed to the *monistic psychist* as a model for his interpretation of the specific nature of the One. For, if it can be demonstrated that there is *a One*, then why should this One not be Life, as well as Intellect, Will, and the like, especially if intellect and will are empirically known only in, or as specific activities of, living beings?

This identification is made *de facto*,[8] and the resulting position may be called Monistic Vitalism. Its dominant tenet is *that the One is Life*, and that this One is not mechanistic, although its functions may be (1) *to mediate* the relationships between mechanistically related terms, (2) to *develop* and evolve into such an intellectualizing-mechanizing stage in the case of human beings, and (3) to guarantee an *inner* purposefulness in all "things."

Monistic Vitalism thus easily develops into Monistic Romanticism. This last position as taken, *e.g.*, in art and literature, is one that, negatively, is scornful of all traditional principles and standards, while, positively, it holds to the rule of a complete reliance upon the present impression, thus placing the emotions and the will above the intellect, and adopting the pragmatic rule of accepting whatever works successfully. Release from the trammels of the old, freedom to produce the new, flux and flow according to no law except that of resulting emotional satisfaction, and this, perhaps, to but one individual—these are the characteristics of Romanticism in the field of the human arts.

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[7] Cf. Driesch, *Science and Philosophy of the Organism*, 1908; Loeb, *Mechanistic Conception of Life*, 1912; Spaulding, "Defense of Analysis," in *The New Realism*, and Reviews of Driesch in the *Phil. Review*, Vol. VIII., 1909, pp. 63 ff. and 436 ff., and of Loeb, in *Science*, N. S., Vol. XXXVIII., pp. 333-336.

[8] The position taken by Eucken.

How romantic, indeed, were the *universe,* if it were of this kind—a living organism, bound by no law, producing the new, pregnant with possibilities, full of surprises, surcharged with vital impulses, which intellectual reflection must follow and not lead, many and yet One! For the emotionally and artistically inclined, for the anti-intellectualists, such a plea is strong,—quite convincing men like Eucken and Bergson.

Such a universal Vitalism and Romanticism is, however, as much a Monism as are Panlogism, Pantheism, Ethical Idealism, and Voluntarism, yet such a philosophy is also a Monism that verges toward Naturalism—although toward a Naturalism that is also a strongly tinged Psychism. For it is *life,* not as the natural sciences usually interpret this phenomenon, but, rather, as they *fail* to interpret and explain it, that becomes the model for the interpretation of the specific nature of the One. Life *as lived,* as non-mechanical, non-chemical, non-geometrical, non-determined, freely creating, ever surging onward, vague and mystical—such is that Life which is the One. And this Life can be only of the nature of Mind or Spirit, which, as holding the *many* together in *relatedness,* and as thus not itself an organized whole, can itself be only Absolute One. Thus it is that Universal Vitalism and Romanticism emerge as further *variants* of generic Monism.

CHAPTER XXXVIII

CONCLUSION

I. MONISM'S SOLUTION OF PHILOSOPHICAL PROBLEMS: CRITICISM

THIS detailed discussion of monistic systems may now be completed by presenting those solutions which these positions give to the main philosophical problems.

First, it is evident that all these monisms are *in their result* predominantly *ontologies*. They solve the ontological problem by concluding, not merely that there is a *oneness of kind* of all "things," as Subjectivism, Psychism, and Materialism maintain, but that there is a numerical One which *relates all, is all*, and underlies or transcends all. It is this conclusion that distinguishes these positions from naturalistic systems. For while these last positions, in some cases at least, conclude that ultimately *all* "things" are of the same kind, they nevertheless admit the genuine distinctness and manifoldness of such similar "things." Monistic systems also accept a pluralism, but they insist also upon the *numerical oneness of ultimate reality*, allowing for a manifoldness only in the realm of manifestations and appearances. Further, in their identification of the One with the nature of some finite entity, such as self, ego, intellect, will, or life, monistic systems give an answer to the question, *What is the fundamental stuff* of the universe? quite as much as did those earliest ontologies which maintained that this stuff was water, or air, or fire.

In their *cosmology* monistic systems follow modern science, *and* interpret as mere *appearances* of One Absolute, *all* those detailed entities with the discovery of which science is partly identical. They also maintain the presence of a law or order in "things," but make the One the *source* or the immanent principle of this order. Also, as the general concept of evolution has developed in science, monistic systems have incorporated its principles in one way or another into their cosmologies.

Further, with the phenomenalistic distinction at hand, of *two orders of reality*, the one of appearances, the other, of genuine reality, monistic systems claim to avoid those contradictions that seem to subsist, if one and the same "thing" or event is *both determined and purposeful.* For, by this distinction, each and every entity can be maintained to have its source in a free, purposing One, and yet to be also a member of a causally determined series. Such an immanent teleology is accepted by all monistic systems. By means of the distinction between appearance and reality, such systems claim to be able consistently to accept both the *deterministic* cosmology of natural science and the *teleology* of an ethics and a religion that demand freedom, responsibility, conscience, and the victory of the good.

Monistic systems also give a very definite solution to the theological problem. While perhaps not all such systems explicitly identify the One of the universe with God, yet, if what the Deity does is more important than what He is, then is this identification made by each specific monism. The One *is* God, because He is that Being who not only *is* all, but who *unites* and *relates* all, who *manifests* Himself in all, and who, in the midst of seeming machine-like chains of events, guarantees their inner purposefulness, and perhaps their goodness. Specific systems may differ as to whether God is predominantly Intellect, or Will, or Life, but whichever of these He may be held to be, His most important functions are the same.

In monistic systems, therefore, the Deity is not the *first* cause in the temporal series of causes and effects; nor is He architect, mechanician, or designer, to stand outside His handiwork and view it from this angle and from that, ever to bear in mind the end which He will accomplish; nor is He merely a Being that is thought of in a manner consistent and free from contradiction, and that, therefore, if He does not *exist,* at least *subsists.* Rather, in Monism, God is a cause that *underlies* or *transcends,* and that is *first in just this specific sense;* He *manifests* Himself in all "things" as their essence, and is, therefore, their *immanent* architect and designer; He exists neither here nor there, neither now nor then, and thus is *eternal* and *omnipresent;* and, finally, with all *finite* "things" related by Him, He, as their relater, is in some vague sense *infinite, unlimited,*—and *perfect.* In this manner does Monism transform the traditional cosmological, teleological, and ontological proofs for God's existence, reinterpreting them in the light of its own distinction between the apparent and the real, the related and the relater.

In their solution both of the *problem of values* and of the problem of knowledge monistic systems are very definitely *absolutistic,* and, therefore, anti-pragmatic and anti-relativistic. In criticism of *relativism,* all monistic systems presuppose the principle that absolute knowledge is possible *in some cases* at least, and accordingly all accept the existence or subsistence of *an absolute good, an absolute truth, and an absolute beauty.* Evil, error, and ugliness, are all undeniably facts of some kind, but for monistic systems they are mere *appearances,* and not ultimate realities. Indeed these entities, as well as the good, the true, and the beautiful could not *be* other than they are, since their appearance is the product of a *logical necessity.* Other systems also accept an absolute truth, goodness, and beauty, and a system of entities that are knowable as they really are,—*e.g.,* Realism does this. But this does not carry with it the further acceptance of the monistic position, that there is One underlying entity which is either identical with the principle of goodness, truth, and beauty, one or all of these, or through which these become facts in the manifoldness of the universe.

It is this specific identification that distinguishes the *absolutism* of the monistic systems from that of other absolutistic systems. Other positions maintain that there is a realm of facts and of states of affairs, some of which are values such as goodness and beauty, and others, non-values, but all of which are related in various ways, thus forming some kind of system, *and all of which are knowable,* though perhaps in many specific instances unknown. Every system that presents as true a theory concerning knowing, makes this presupposition of the absolute knowableness of some "things,"—a presupposition which is identical with the principle, that there are terms which are related, and yet do not affect one another.

One can grant, therefore, that all "things" form a *system* in that they are related,[1] and yet not be forced, also, to grant *either* that there is an effect of each "thing" on every other thing, with all "things" thereby becoming similar in character, and infinitely complex, *or* that a relation demands an underlying unitary entity as a relater. But it is, of course, just this last assumption, which is identical with the underlying-reality theory of relations, that distinguishes Monism from those other positions which also grant that there is a *realm* of fact *to be known as it really is,* and that this realm is a *system.* Accordingly, if valid criticism can be brought against this specific theory of relations, or against its application to the Universe, we can give up Monism, and yet both retain Absolutism and maintain that the universe is a system.[2] Just this conclusion, however, is one of the findings of The New Realism and The New Rationalism.

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[1] See Chap. XLI., IV.-VI.

Absolutistic as they are, therefore, in their position toward both the knowledge of and the character of the facts which are denoted by the concepts of *truth, goodness,* and *beauty,* monistic systems are, further, *perfectionistic and formalistic* in their position concerning both the factuality of *ethical* and *æsthetic* values, and the *knowledge* of these, or, negatively stated, monistic systems are anti-hedonistic, anti-utilitarian, anti-relativistic, anti-pragmatic. Thus, in the field of ethics, monistic systems teach the absoluteness of the "standards" of right and wrong, and of goodness and evil. *Each standard* is an *eternal* fact or entity that is *unchanged* and *unchanging,* although its formulation in the "trial and error" development of knowledge may vary from generation to generation, and from race to race. Such passing "practical" standards may *seem* absolute to him who is immersed in the flood of the tradition that they themselves help to form, and it may even be granted that in the general conflict of standards, out of which knowledge of the absolute standards shall emerge victorious, it is better to have some standard, even though it be false, than to have none. But still the *perfectionism* of the monistic systems is not affected thereby. For, from their standpoint, while, *e.g.,* all the *formulations* of the principles of right and wrong that have been made up to the present may be in error, such formulations representing only attempts to arrive at a knowledge of principles by the method of trial and error, yet *such absolute principles are still entities* that are ever present to be attained, if possible, and that ever challenge us to further gallant effort. Indeed, the subsistence (or existence) of such principles is maintained by Monism *to be implied by the very approximateness of the formulations that mankind has made.* For Monism, as part of its foundation scheme that the positive term implies the negative as a formal contradictory, must also hold that *the relative implies the non-relative,* the passing, the eternal, and the approximating, *the limit* and the absolute.

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[2] *Ibid.*

However, other positions than Monism accept this absolutism and perfectionism of standards, so that again it is the identification of these with the essence of the One that especially distinguishes monistic systems. Also, in thorough-going Monism, this perfectionism is made to concern not only ethical values, but also æsthetic values, with the modes of tentative approach to these respectively *conscience* and *æsthetic appreciation.* Yet it is conceivable, that one might be absolutistic toward ethical values, and relativistic and pragmatistic toward æsthetic values. In its attitude toward truth, however, Monism takes the clear and precise position, that, although truth, as a specific relation of correspondence between knowing and entity known, is of value, value does not constitute truth. Truth is just that specific complex entity which is formed by this specific relation, while this complex (truth) is itself, in turn, an absolute value that is both good and beautiful.

In their solution of the several epistemological problems, monistic systems are all in essential agreement. All are, *e.g.,* absolutistic in the way that has just been described. There are facts to be known, there is *one absolute truth* to be attained to, if possible, and the process of finite knowing, in science, philosophy, and common sense, *makes* neither fact nor truth. This Absolutism, however, does not exclude tentativeness and error. The best that we can do, actuated by the appreciation of the value of truth for its own sake, is to make every effort to know, even though we may fail. Monistic systems nevertheless take the position, in their Absolutism, that such possible failure implies *a standard,* not yet reached, perhaps, yet ever more closely approached. Indeed, all knowledge, *except that of their own positions,* is usually interpreted by monistic systems as being of this tentative character, but, toward themselves, each monistic system presupposes, tacitly at least, that it is not merely an approximation, but a revelation of absolute fact with little or no ground for doubt. In this manner monistic systems usually become extremely dogmatic.[3]

Many monistic systems account for the merely approximating character of most finite knowledge (the exception being themselves) by the hypothesis of the *organic theory of truth* and of *knowledge,* and, indeed, of all fact. Thus, although the demand for *consistency with* their fundamental postulate of the underlying-reality theory of relations does not compel them to do this, they nevertheless maintain *as regards truth, that any one truth is that truth only by virtue of its relation to all other truths,*—in other words, that *the modification theory of relations is valid for the system of truths.*

One consequence of this position is, that the attainment of even one perfect truth is impossible, unless all truths to which it is related have come to our knowledge. But, it is argued, success in knowing all truths is impossible, both because the totality of truths can be arrived at only by gaining *a succession* of single truths, and because we as finite beings cannot deal with a possible infinity of truths and their relationships.[4] Therefore, it is inferred, that to finite, human beings there are accessible *only those truths* (?) *which are partial* in the sense that they consist not of sharply delineated true and false parts, but of a *complex fusion* of constituent minor truths and errors. Only to an infinite, unlimited, perfect mind, that knows all facts, all truth, and all relationships, simultaneously and immediately, is the whole absolute truth in all its aspects available.[5]

This position, since it itself is advanced in each case as *an absolute,* though single truth, by a philosopher who is a *finite* human being (whatever this may mean) is clearly *self-contradictory.* For, if one truth (?), namely, the truth, *that no truth can be known in isolation,* can nevertheless be known *by itself,* it follows that many other truths can also be so known. Thus the organic theory of knowledge, of truth, and of "things," breaks down at the weakest link of the chain, namely, where it would connect its own explicit theory with the conditions that are presupposed in advancing that theory as true.

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[3] See *The New Realism,* Introduction.

[4] Joachim, *op. cit.*

[5] Royce in *The Spirit of Modern Philosophy,* and in *The World and the Individual.*

For monistic positions, therefore, *the nature of truth* is not constituted by successful workings, as is contended in pragmatic systems, but by *coherence among truths* and by a correspondence between fact and knowing. For, granted, *e.g.*, the completely intuitive knowing of a single mind that underlies the universe of organically related facts, then would there be a perfect correspondence between His knowing and all facts known. Indeed, since for monistic systems all entities (with one exception) are the manifestation of such a single Being, His knowledge and all entities are, perhaps, identical, and not merely corresponding. But, for finite beings, who are themselves mere manifestations, the correspondence is only partial, incomplete, confused, and vague.

As regards the problem of *the test of truth,* monistic systems accept the empirical confirmation in perception both for common sense and for scientific knowledge. Yet this knowledge is only of *appearances.* But that panoramic knowledge which is possessed by an Entity that underlies *all* and manifests itself in *all,* is held to subscribe to *the criteria of coherence, of consistency, of freedom from contradiction, of self-evidence,* and *of the inconceivability of the opposite.* Thus, coinciding with the tacit presupposition of each monistic system, namely, *that it itself is absolutely true,* there is this special set of tests by which this absolute truth is held to be guaranteed. But it has previously been shown[6] both that such tests do not stand their own test, and that history shows them to be, because of the very diversity of the systems to which they lead, quite as fallible as are other tests. Thus it is, that *in the working out of philosophical systems, even of absolutistic systems, there is no absolute criterion for the attainment of what the absolutist would have absolute knowledge.* No one can do more than *attempt* to know, supported by the principle, that *absolute truth may be won, although absolute proof is lacking.* On the basis of this principle, it is possible that facts should be revealed to him who has no acquaintance with the principles of proof, and, indeed, it is precisely in this way that the untutored person does know. So, also, can this same principle be the basis for the philosopher's knowing. It is only the attainment of more truth that is conditioned by the knowledge of the methods of proof, and the like, but truth itself is not thus dependent.

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[6] Chap. XV., IV., 5, 6, and 7.

The solution which monistic systems give to the problem of the *origin of knowledge* is in agreement with the distinction which they make between appearance and reality. The sciences and common sense are maintained to be but *a knowledge of appearances,* and this knowledge is regarded as the result of both intellectual and sensational processes, without the former being a *transformation* of the latter, and with sensational processes themselves existing in the realm of appearances. *Some* knowledge is thus regarded as originating in sensation; *other* knowledge as having *a purely rational source.* But the knowledge that comes from reason has the advantage, that at least some of it reveals ultimate reality, and not mere appearance. Sensation can never lay claim to this prestige. Sensation may be the stimulus or occasion for the appearance of rational processes, even as the closing of the key is the occasion for the passing of the electric current, and reason, thus aroused to action, may work upon the data of sensation. But when reason is freed from this bondage, then, by means of such tests as self-evidence, and the inconceivability of the opposite, and of such methods as are identical with the very presuppositions of thinking and knowing, there is opportunity for *a knowledge of the ultimate nature of "things,"* and not of mere appearances. On this basis it is contended, *e.g.,* that the *underlying-reality theory of relations* is the only theory that accounts for relations in a manner that is free from contradiction and consistent with what we *must* think; that, accordingly, ultimate reality is *numerically* One, and, as One, Universal Self, Intellect, Will, Life, Evolution; and, finally, that, even as the finite self is but an emanation from or a manifestation of such an "infinite" self, so, also, are the *purely intellectual principles* of the finite mind *one with those of the All-mind.*

In conclusion, it is not surprising, therefore, to find that monistic systems, even those which regard the All-One as of the nature of Life or of Evolution, tacitly make this *a unitary* *substratum-like, or substance-like Being,* after the *model* of *the traditional view,* that the attributes of a physical object *inhere* in a *numerically single underlying substance or substratum-like core.* For, although the sciences of the present day have freed themselves from the influence of this view, and from the logic that is derived from it, the philosophy and the logic that are taught in the schools have not. But, as we have seen, the logic by which the underlying-reality theory of relations is demonstrated, is, in fact, only the Aristotelian logic of the *identity* of a "thing" with itself, and of the implication by each "thing" of its formal contradictory, *carried one step further.* Therefore it is not surprising that the conclusion should be, where this theory is applied, that *the universe is One.* What matters it, then, whether this One be Self, Intellect, Will, Life, or the Absolute Continuity of One Evolution? Is not the One in any case but *a numerically single substratum* to which only a different nature is assigned after varying analogies? What matters it which of these analogies is selected, *e.g.,* what matters it whether *Self,* or *Will,* or *Life* be selected, since in any case *both that from which the analogy is drawn and that to which it is applied* is but an underlying *substance* that holds in its absolute unity the manifold of its attributes?

To these inquiries no other answer can be given than the answer, "It does not matter"; indeed, no other answer than this is to be looked for, if the complete development of the position that we are considering is borne in mind.

That development began with the unconscious influence of the physical thing—as defined as a substratum or substance with attributes,—on philosophy, science, and logic, the result being that the Aristotelian logic is essentially a logic of *things* (as thus defined) and, therefore, a logic in which the concepts of *substance* and of *cause* play the leading rôle, together with the specific relations of similarity and dissimilarity, and of inclusion, complete, partial, or negative. This logic became the logic of the tradition—of the tradition in which the psychology and the philosophy of the last three hundred years has developed—and, accordingly, as due to its influence, there appear the views, *e.g.,* (1) that the conscious self is a substance, as the *unifying relater* of its experiences, and, (2) later, in Objective

Idealism, that *any two terms,* as related, demand an underlying entity to mediate the relationship and to be identical with the unity which the inseparableness of the related terms implies. With *this specific theory of relations* once developed—by the use of the principle of contradiction—it is then applied to demonstrate the position, that the Universe *as cosmos and as system* is Absolute One. Therefore can *this One* be only *substance or substratum in its functioning*—whatever else it may be—and by whatever name it may be called—Self, Ego, Will, Life, *Élan Vital,* or even Unknowable. For its "essence" is its functioning, and not its naming.

Thus it is that the circle is completed,—in other words, thus it is, that monistic systems both begin and end with *substance,* even as might be predicted from the domination in them of *the old logic,* and from their ignoring of that modern logic of series, and of functions, in which empirical evidence is found for the *theory of external relations,* and for the principle, *that related terms do not affect each other, nor demand a third entity to mediate their relation.*

II. WHAT CAN THE ABSOLUTE ONE BE?

In the several monisms that have been presented the crucial point in each instance is the selection of some type-phenomenon by analogy to which the further character of the universal underlying one shall be interpreted. Reasons are advanced, of course, for the selection of one specific type phenomenon rather than another, but this means only that one *positively experienced attribute* rather than another is finally chosen and the World-One made of this character.

However, one *may* prefer *not* to select any one type-phenomenon, but to stop with the general argument for a universal underlying One, disclaiming the possibility of knowledge of, or of valid arguments for, the further character of this One. Such a position may be called Agnostic Monism. It is Monism, since it maintains that there is a numerically single entity which makes the universe One; it is Agnosticism, since it contends that the further character of this One is unknowable. Therefore the One is called *The Unknowable.*

In the argument for this position it is contended, that, since it is the function of the One to mediate all relations between terms, especially between those terms that are all-inclusive, and since the evidence for this mediation is derived from the implication, by each term, of its formal contradictory, it is a question whether this underlying One *can be of the nature of either term.* For example, if self and not-self are the contradictory terms, it may be asked, whether that term which mediates the relation between these terms can itself be either a self or a not-self. For does not the *identification* of the One with either term of the two terms between which the One mediates, imply *a specific relation* between (1) the One, as so identified, and as *mediating,* and (2) the two terms as the *mediated,* so that still another mediating and underlying entity is implied,[7] which entity is *not either self or not-self,*[8]—in the example chosen?

Similarly, if *good* and *not-good* (evil) are selected as the pair of contrasting terms, each relative to the other, then the mediating One, even though identified with a Deity, cannot be the Good. For that which is good by virtue of its contrast with and limitation by evil, loses this character if it is made all-inclusive and universal.

The same criticism may be brought against all those specific monisms that interpret or regard the all-inclusive One as being of the character of some finite *positive* "thing." And to the writer this criticism seems to be quite valid, for reasons that proceed both from the old and from the new logic, and that *make any form of monism untenable.* This criticism may be considered in some further detail.

First, it is evident that the monist in his endeavor to identify the One with some positive "thing" is searching for a *concept* or for a *kind* under which everything shall be contained, and which in turn shall not be contained under any other concept; *i.e.,* the monist is usually not content to stop merely with the conclusion, that there *is* a One, disclaiming knowledge of what the further nature of this One is, but he wishes to ascertain the One's further positive nature, thus to show, *e.g.,* that it is spiritual, or, more specifically, that it is Will, or Intellect, or

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[7] Herbert Spencer, *First Principles,* ed. 1900 (Appleton), pp. 3-129.

[8] Cf. Bradley, *Appearance and Reality,* and Taylor, *Elements of Metaphysics.*

Life. To succeed in such an endeavor would be to arrive at a kind or concept which is all-inclusive, and to find what the old logic calls the *summum genus.*

In criticism of this attempt it may first be demonstrated that even by the principles of the traditional logic, the monist cannot accomplish his purpose. For it is a principle of this logic, *that a characteristic which differentiates one species of a genus from another species, cannot also be a characteristic of that genus.* The genus includes in its connotation only that which is common to the several species, while the species are differentiated from each other by characteristics which the genus cannot have in its function of including them, and of denoting all the individuals that the species denotes. For example, *vertebrates* and *invertebrates* are the two great classes of *animals.* The presence of a spinal column and a cerebro-spinal nervous system are the differentia of the former (logical) species, while the lack of these characteristics and the presence of only a ventral nervous system is the distinguishing feature of all invertebrates except the *Protozoa* and the *Porifera,* which have no nerve cells at all. *But the logical class or genus, animal, is characterized by none of these differentia of the species.* In turn this genus, *animal,* is co-ordinate, as logical species, with the class, *plant,* with both of these species in turn subsumed under the next higher genus, *living being.* In the connotation of this last genus the specific characteristics of the two species, plant and animal, are absent. As, now, we go on upward, as it were, in the survey of these relations of subsumption of species to genus, we approach the *summum genus.* Thus, *living being* is a co-ordinate species with *non-living being,* with both included by the next higher genus, *physical entity;* this genus is, in turn, a co-ordinate species with *psychical entity,* with both of these classes under the genus *existent; existent* is, in turn, co-ordinate with *non-existent subsistent,* which denotes such entities as numbers, and laws, as *entities* that are not correlated *either with a specific time or with a specific place;* the genus for *existent* and *non-existent subsistent* is mere *entity,* defined as that which can be *thought in consistency* with the data of sense experience and the principles of correct reasoning.

Have we, now, reached in this term, *entity,* a *summum genus* which has, by the elimination of the differentia of the logical species, only the characteristic of *being consistently thought*, or are we forced onward to a still higher *summum genus* of *merely mentionable "things"* which shall include not only *"things" that can be consistently thought*, but also *"things" that cannot be so thought, that are not implied by other "things," and that are, perhaps, self-contradictory?*

Either of these options places the monist in a precarious position. For, if *the One* is to be *all-inclusive*, it must be identical, in some way, with the *summum genus*, while, on the other hand, if *the One* is to have some *positive* content, beyond that of being *merely the consistently thought* or *the merely mentionable*, it must share the characteristics of some of its logical species and so can not be a *summum genus*. But the first alternative is objectionable to most monists, since they wish to identify the One with some positive content such as *self* or *will*, and *the second alternative runs directly counter to the logic of genus and species.*

If the character of *the One* be only that of *being mentionable*,[9] then, of course, there is no denying the formal correctness of this identification; for the *absolute One certainly is mentionable*, being *at least* a combination of words that has a considerable power of verbal suggestion.[10] But the monist is, of course, not content with this, for he would have the One not only *mentionable*, but much more—*a self-consistent entity at least*. However, if the monist advances this claim, he has entered the lists, and accepts the chance of defeat. For *the One* may prove to be but *self-contradictory*,—mentionable, of course, along with other entities, but, *as a species, differentiated from them*. Precisely this seems to be the *logical status* of *the One*; for, if the "office" of *the One* is that of mediating relations between terms, then each of these terms is in turn related to *the One* as mediator, and *a still more ultimate One* is demanded to mediate this relation. Thus the situation that *seems* to imply *an ultimate One*, really *implies* that *no One is ultimate*. But further, if, in addition to performing a mediating function, *the absolute One* is to be a *summum genus*, or *a kind of all kinds*, a class of all classes, then it must *logically include itself,* since *it* is *an entity* and belongs to some species. But this self-inclusion *contradicts* the principle of classification advanced by the traditional logic, namely, that *the genus cannot include itself as a species, or as an individual* of any of its own species. This principle may, however, not be universal, and even by the *old* logic there may be one concept that meets this peculiar demand, this exception being the concept, *mentionable "things"—for these are mentionable.* On the other hand, *by the new logic,* this problem is solved by the realization, that only implication and objective "states of affairs," and not mere *mentioning, constitute or make a concept.*

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[9] Cf. Chap. XLIV.

[10] See *The New Realism*, Introduction, for this fallacy.

Here, therefore, *entity,* with its definition of *that which can be consistently thought,* fulfils the demand made on the *summum genus,* namely, *that it shall include itself;*[11] for *this definition of "entity" is itself an "objective state of affairs" that is implied and consistently thought;* and, *an entity is an entity.*

The options of the monist are, therefore, either to identify the One with *a merely mentionable entity,* at the risk, however, of such an entity being self-contradictory, or to make *the One an entity that merely possesses the characteristic of being consistently thought.* This last, of course, the monist would claim *the One* to be as the result of his *argument* for it; yet, if he accept this alternative, he is still logically prevented from assigning to *the One* the positive characteristics of any species, especially of the characteristics of any physical or psychical existent. *The One,* therefore, logically remains devoid of all content *except as it is thought as One*—and perhaps it is not even so thought consistently, as we have seen.

Since he thus fails to demonstrate consistently by the old logic, either that there *is* an underlying One, or that this One is identical with some *kind* of "thing" of *positive content,* the monist may next turn to the new logic in the hope of accomplishing his purpose. But here failure again awaits him, provided the results of modern logical analysis are used correctly, and are not misinterpreted.

By the new logic we may indeed accept *one universe, but a universe that is one only in the sense* that it is a *totality* of terms and individuals, both simple and complex, classes and series, states of affairs, existents, and subsistents, that are all *related,* though in different ways, and with *neither* one universal relation *nor* one mediator of all relations.[12] The universe, therefore, may be, *as a totality,* in one-one correspondence with the number 1. However, *this oneness does not mediate all relations, nor make all the parts of the totality like in kind.* This position may be called *additive pluralism,* and is quite as compatible with the *oneness of totality* as is the position which maintains that there is an *absolutely simple One* that mediates all relations.

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[11] Cf. Chaps. XLIII. and XLIV.

However, the monist is not satisfied with such *a bare oneness* of totality, but, having reached by argumentation an Absolute One, he seeks to find for this, by proper *analogy,* an appropriate content. Therefore he may turn, *e.g.,* to the straight line as a favorable possibility for such an analogy. For a line is granted to be made up of points, and thus to be a manifold, but it is also *one,* and seemingly, as a line, *an absolute one,* homogeneous and simple.[13] Have we not, therefore, here an instance of an entity, which, as either *the line itself,* or as *the relation* between the points, or even as the *concept line* or *point, is itself an absolute one* that mediates the relations between the many entities of a manifold, and that is also *a specific kind of thing?*

This suggestion has considerable plausibility, which might be taken advantage of by the monist. Yet a little rigorous analysis shows that each of the above possible hypotheses must be rejected, even in the face of the fact, that this analogy *of the line* is as favorable a possibility as the monist can find. For in the case of the line *the oneness in the midst of multiplicity* is much more apparent even than it is in an organism, or in a chemical compound, or in a functional complex such as motion, and the analogy of a point or of an instant, each of which is absolutely simple, is not promising, since in these instances there is no multiplicity.

Yet even the analogy of the line fails. For modern logic shows that a line is a *series* of an *infinite number* of *unextended* elements (points) that are related *asymmetrically* and *transitively,* the "result" being that, through the presence of these *non-additive* relations, *extension* of one dimension is derived from *that which is not extended.* However, the asymmetrical and transitive relation that relates the points is not the only relation that is present. For the line consists not only of points, but also of smaller lines, so that there are also the relations of the smaller lines to one another, and of the smaller lines to their points, and of the whole line both to the smaller lines and to the points. But even if there were not many relations, but only one, this relation would not be *the One,* for besides it there would be the *terms* to be related. It is fallacious, therefore, to *identify* the *oneness* of the line with any one of the relations that are involved in it, or with the *concept of relations* as such. For the *concept* of *relation* cannot itself perform the "function" of forming *an absolute one* in the line, since *concepts* do not themselves relate, but are objective "states of affairs" that involve one or more specific relations of similarity.

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[12] *Ibid.*

[13] Cf. Chap. XLIII., VII.

Failure also meets the attempt to *identify* either *the concrete oneness* of a line or the *bare concept of oneness in general* with the all-mediating One.[14] A point is an absolute *one.* So, also, is a line *one,* but *a one* that is at once *a totality, a class,* and *a series* of points. *Point* is that *concept* or *objective state of affairs* that is defined in a very specific way, in relation to a line, as *the unextended element of space,* while *a point* is *any* individual that this concept denotes, or of which this definition holds. A similar difference subsists between the concept, *line,* and *any individual line.* However, the concrete oneness of *any* point of *any* specific line does *not* mediate the relations between all the points of that line, nor does the oneness of the line as a whole perform this supposed mediation. On the other hand, the concrete oneness of a line as a whole is a *derivative* oneness, since it is *logically subsequent* to the subsistence of points and of certain specific relations between points. Given these relations *and* points, *and the line subsists as one,* with the several other relations above enumerated also subsisting. Thus neither the oneness of a point, nor the oneness of the line *mediates* the several relations that subsist in the line.

It is a very similar *state of affairs* that is also found wherever there is a *oneness of kind* or of class, and of the *concept* of the class. The oneness of a single point or instant is not mediated by a relation, but the oneness of the *class* of points is mediated or—better stated—organized by *the relation of similarity,* at the same time that there are other relations between the points whereby they form a line. *The fact of the similarity of the points to one another is the class of points,* and this entity is *numerically distinct* from any one point. But this oneness of a class is *organized* by the relation of similarity, but does not itself mediate this relation.

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[14] Cf. Chap. XXVII.

By the new logic, further, *knowing is discovery.* When certain specific discoveries are made, classes or groups of entities that are related by similarity are revealed. But similarity is not the only relation present. For example, all points are similar—as points, but it is not this relation that organizes points into a line. Classes may also be similar to one another, so that there are *classes of classes; e.g.,* both points and instants are similar in that they are *indivisible elements.* But between points and instants there are also other relations. Thus, *e.g.,* by virtue of one-one correlating relation between a *series* of points and a *series* of instants there is an entity which is motion.

However, in all these cases, whatever *oneness* there is,—whether it be the oneness of *a group* of *similar* entities, or of *two correlated indivisible entities* such as a point and an instant, or of a *series,* or of one series related to another, and the like, *the oneness,* with the exception of the absolute numerical simplicity of, *e.g., a* point or *an* instant, is that *of certain entities in certain specific relations.* It is, therefore, a *oneness of an organized, but not of an organic whole.* Both the relations and the terms are objective, and the terms standing in specific relations are an *objective state of affairs, that specific class of states of affairs* in which the relation is that of *similarity* being the class of *objective concepts.* The concept is, therefore, *not made* by the mind, but is discovered. But over and above the specific relation of similarity that subsists in such cases, there is *no further additional entity to mediate the relation.* Whatever oneness is present is, therefore, with the exception of the absolute oneness of entities such as a point or an instant, *a oneness of an organized whole that is already one with the relating of the terms by the relation.* Thus it is that modern logic shows not only that there is no Absolute One to mediate all relations, and to underlie the universe, but also that, even if there were such *a One,* it could not be identified with any *concept* or *kind* of "thing," not even with such kinds as *term* and *relation.* For these are *distinct,* and are, therefore, *two,* and not one. Thus it is, also, that modern logic confirms the results of our previous criticism, which showed that the argument for the underlying-reality theory of relations, *i.e.,* for the necessity of a *one* to mediate the relation between terms, is *self-contradictory. Such a one,* we found, is never reached, provided the argument by which the attempt is made to reach it, is *consistently* adhered to. For any *one* supposedly *final underlying reality* whose function might be that of mediating the relation between two or more terms, is *never final,* since, as related to those terms, it demands *a still more final reality.*

Nor is the search for an Absolute One aided by the endeavor, as a last desperate attempt, to identify this One with such refined concepts *as Oneness, relation, term, mentionable, consistently, thought-entity,* and the like. For our present criticism shows, on the one hand, that these concepts are always such that they allow of "otherness," *e.g., term* is other than *relation,* so that the problem under consideration is repeated in the form of the question as to *what* is the nature of that One which mediates the relation between these *contrasted* entities. But our criticism also shows, on the other hand, that a concept is a specific and *objective state of affairs* or relation of *similarity* among *the individuals of a class.* Such concepts or relations *organize* such individuals, so that the unity that results is only *the unity of an organized whole,*[15] but nothing more. In fact, that each of the specific concepts under consideration is itself just such a specific organizing relation, is disclosed by only a slight analysis. Thus, *e.g.,* if there are *many individuals* which are each *one,* or each a *relation,* or each a *term,* then are *one, relation,* and *term* each a specific instance of a "way" in which "something" is *similar* to "something" else; *i.e.,* each of these concepts is *a specific relation of similarity* in which individuals can stand, even as *oneness, relation,* and *term* must themselves be *similar to one another* in order to belong to the *class of concepts.*

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[15] Not organic; cf. Chaps. XLIII., XLVI.

A similar assertion may also be made of many other entities, such as those that are referred to in this very discussion, as, *e.g.*, *individual*, and *class*. But our analysis is sufficient to warrant the conclusion, on the one hand, that there is no other *content* or meaning to the term, *The Absolute One*, than that it is *a mere mentionable*, and, on the other hand, that, while the universe is an organized whole,—indeed, a very complex organized whole—*as such a whole, it is one only in the sense that the totality of all "things" is one.* For an Absolute One, other than the *oneness of a totality* which allows also of the fact of an *organized whole*, there is, then, not only no valid and consistent evidence or proof, but also no ascertainable positive content, other than that of being a *mere mentionable.* For that the Absolute One is at least *this*, certainly can not be denied at the conclusion of a discussion in which *what the nature of the Absolute One may be* has been the leading *topic* of discourse.

SECTION IV

REALISM *

FUNCTION PHILOSOPHIES

Realism is that constructive philosophical position which is derived by an empirical and critical examination of other philosophies, most of which are found to presuppose, or to contain, explicitly or implicitly, positions and principles that are to be accepted as true. The systematic and consistent body of these positions and principles constitutes that philosophical position which may be called Neo-Realism, and also The New Rationalism. New Realism, or, as we may call it for the sake of brevity, Realism, may be presented and discussed to advantage under two headings, namely,

I. The central doctrine of Realism.

II. The more detailed theory of Realism, including the Structure of the Universe, and the Realistic Solution of the main philosophical problems.

I. THE CENTRAL DOCTRINE OF REALISM

CHAPTER XXXIX

THE SOLUTION OF THE EGO-CENTRIC AND VALUE-CENTRIC PREDICAMENTS

The central doctrine of Realism is identical with *that solution of the ego-centric and value-centric predicaments* which is found, by a critical examination of other systems, to be present *logically* in their tacit presuppositions, implications, and admissions, and, *psychologically,* in the character of those *conditions* that lead to and permit of philosophical deduction and investigation. In presenting the evidence which thus leads to an empirical establishment of Realism, we need to a large extent, therefore, only to summarize the criticisms that have been made at various stages in our previous discussions.

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* The general bibliography for Realism will be found at the end of Chap. XLIII.

The most important and, perhaps, most essential realistic doctrine is *the solution of the ego-centric predicament.*[1] First we may state, at the risk of repetition, that this predicament is *held* to be constituted *by the fact* that it is impossible to perceive, remember, imagine, think of, or mention any object that is not for that reason a *perceived, remembered, imagined, thought of,* or *mentioned* object, and that is not, therefore, an object that is *in relation to* either perceiving, remembering, imagining, thinking, or mentioning—briefly, to knowing, either *actual* or *possible.* Or, if objection be made to this formulation, then the predicament may be formulated as meaning that because one can in some sense think of, or at least name *the universe as all-inclusive,* therefore *everything is thought of, and so is in relation to knowing.* However, such a knowing is quite different from that which we usually identify with genuine knowing, namely, a *knowing about* and in some detail, and is at best only a knowing at its very minimum, namely, as perhaps *a mere mentioning,* if, indeed, it is knowing at all.

But even if it were a fact that the universe both as a whole, and in every detail, is, as known in some way, related to some knowing, either past, present, or future, existent or merely subsistent, this would be of consequence *only* on certain conditions. One of these conditions is, *that two terms—any two—by virtue of being related, causally influence each other,* producing some effect, modification, or alteration, each on the other. The other condition is, that *any relation between two terms must be mediated* by a third entity.[2] *If* the first condition were the fact, then the further fact that the world which we know is related to knowledge would have important consequences. For we should then be obliged to infer that *the known world is one that is affected, altered, or modified by the knowing of it.*[3]

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[1] Cf. Chaps. X., XXVIII., III.

[2] Cf. Chap. XXVI.

[3] Cf. Chaps. XXIX.-XXXIII.

On the other hand, if the second condition were the fact, there would be the implication, *that the known world and the knowing are related and united by an underlying or transcendent numerically simple* entity *that makes everything in some sense* an *Absolute One.*[4]

The first position, that two terms affect each other by virtue of being related, is the now familiar modification theory of relations; the second, the familiar underlying-reality theory. Of these two theories the latter has, however, been found not only to lack all inductive proof, but also to be self-contradictory.[5] No concrete entity, *i.e.,* one not merely argued, but found by some other means of cognitive approach, is *discovered empirically* to be the universal underlying One that monistic positions claim; while, *as argued,* the theory is self-contradictory, and fails to attain that which it seeks, since at each step of getting to an underlying entity that shall mediate the relation between two terms, this entity is in turn found to be related to the two terms, so that a *further, more ultimate* entity is demanded. Thus each "would-be" *ultimate* presupposes that it is *not* ultimate, and hence the self-contradiction. Also, as regards the former, the "modification theory," this is shown by direct inductive evidence at least *not* to be universal.[6] For certain concrete instances are found, *e.g.,* in the case of many functional complexes, for which this theory does not hold, and among these complexes *is the relational whole,* knowing *and* object known. Therewith, however, is the ego-centric predicament solved. Just how this is the case we shall now examine.

All through this volume many of the important points of difference between the old and new logic have been emphasized. We have seen that the old logic was unconsciously formed and developed on the model of *a physical thing.*[7] Accordingly the relations that are emphasized by this logic are chiefly those of the inherence of qualities in a *substratum,* of *similarity* and *difference,* of the *inclusion* of one class in another, of *causation,* and of the *additiveness* of parts to make a whole. From the same source or influence there also comes the *identification* of

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[4] Cf. Chaps. XXXIV.-XXXVIII.

[5] Chap. XXVI., II., 3.

[6] Chap. XXVI., II., 2.

[7] Chaps. III., XXVI., and XXVII.

all terms, either (1) with "things" that *interact,* giving the modification theory of relations, or (2) with "things" whose relatedness demands another entity to mediate the relations between them, giving the underlying-reality theory of relations. But of the *non-additive* relationship of parts to form a whole, *i.e.,* of the modern principle of *order,* and, therefore, of the relationship of *function* as sharply different from that of *cause,* and of the method of *analysis in situ,* and the like, the old logic was entirely ignorant. The formulation of the principles and the methods that are involved in these situations is identical with *the new logic,* both as this has been used unconsciously in the development of such exact sciences as mechanics, and also as it has been consciously recognized in recent years.[8]

Now it is precisely by either the tacit or the explicit presupposition and use of certain principles of this new logic, more specifically of the method of *analysis in situ,* and of a *functional* or *external* relationship, that *the ego-centric predicament is solved,* and made no longer a predicament, even by those philosophies that are explicitly developed from contrary principles.

The modern investigation and analysis of motion, as illustrated by the pioneer work of Galileo in discovering the laws of motion, is an example of the use of these principles and methods. Motion cannot be removed from time, nor time from motion in particular cases of its occurrence, so that the character of their relatedness can be discovered only by an *analysis in situ.* But such an analysis shows that time and motion are related, and yet that neither is thereby *causally* influenced in any way by the other. Neither one "makes" the other, neither affects, modifies, alters, or causes the other. Thus motion in general is found to be a *function* of time. Specific motions, with specific numerical values for (in correlation with) different specific velocities in the case, *e.g.,* of retarded and accelerated motions, are functions of specific times, with a one-one correspondence between each such value and some one instant of the specific time period concerned.

Innumerable other instances of analysis *in situ* could also be given, for the method is a widely accepted logical and scientific

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[8] Chaps. XXI.-XXV., XXVII., XLI., XLIII., and XLIV.

means of procedure, upon which some of the greatest modern discoveries and advances in knowledge have been dependent.

With, now, an *analysis in situ* the only practical method of procedure in many cases that require analysis, such an analysis is also a method that leads to the discovery of relations that are *external.*[9] The relations between time and motion, and between time and change of velocity, *i.e.*, of acceleration, are examples of such relations. Other examples are the relations (1) between any two points of a line, (2) between any two instants of time, (3) between a point and an instant,—which complex is the "element" of motion. In each of these instances two terms are related that yet *do not* and *cannot* causally affect and modify each other except on the condition that each thereby becomes *complex* and so *presupposes* ultimately simple elements that *are externally related.*

The time has been when the two theories of relations that are opposed to this "external theory" have been based on grounds that were regarded as *self-evident,* or as excluding *the conceivability of the opposite.* But today these methods of establishment are found to be no more than mere psychological tests, and thus to give proofs which show now one principle and now another to be "absolutely true," and shift one's convictions first to one position and then to another.[10] The evidence for the external theory is, however, not tested by these criteria. It is a theory which is not self-evident, nor is it one whose opposite is inconceivable, although the two theories *opposed to it presuppose it,* so that it is presupposed *by its own denial in them.*[11] It is, moreover, a theory that is shown by *inductive* evidence to be the correct theory for at least *some* instances of related terms.

With such examples of scientific *analysis in situ* and of externally related terms before us, the *hypothesis* is permissible, that *the problem of the relationship of knowing to the object known may be examined by the same method and principles, with the result that the known object may be discovered to be related to the knowing, but not to be caused, altered, or modified thereby.* This hypothesis, however, solves, if it is correct, the ego-centric predicament. But, that it is correct is shown by its empirical confirmation in a number of instances:—

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[9] See Chap. XXVI., II., 1.
[10] Cf. Chap. XV., IV., 5, 6.
[11] Chap. XXVI., II., 1.

I. Just in so far as any *state of affairs*, holding of any entities whatsoever, is advanced in any science or in any philosophical position as a state of affairs *that is true*, there is presupposed (1) that this situation of a *known* state of affairs can be *analyzed with the knowing left in situ;* (2) that these two terms, namely the *knowing and* the *complex object* or *state of affairs known*, can be distinguished; (3) that, if this particular knowing were not present, the state of affairs would still be the same as it is when the knowing is present. This last specific presupposition, particularly, is the sole logical condition on which any theory, scientific or philosophical, can (be claimed to) portray the facts, and, therefore, be (advanced as) a true theory. And the discovery of this presupposition means that one has found *another instance* of the validity of the theory of external relations. Knowing and known object, complex though this be, are related; even *the whole universe*, if we can use this term so as denotatively to know all, may not be exempt from this judgment; but, whatever the object known may be, it is presupposed *to be related* to the knowing *as if* this were not taking place, and, therefore, as *independent of the knowing.*

These presuppositions are made even by those philosophical systems which, like Phenomenalism, Subjectivism, Materialism, and Pragmatism, advance explicitly *a developed theory of a different state of affairs*, namely, one in which it is maintained that knowing *does* make *some* difference to the object known, and that the latter is *not* (causally) independent of the former.[12] For in each of these philosophies *this* last specific state of affairs *is* tacitly assumed to be related to *knowing*, and yet not to be either constituted or altered thereby. Thus all these positions are inconsistent, self-contradictory, and self-refuting.

II. These positions, as well as others, also presuppose that the ego-centric predicament is solved in a number of other instances than that of the knowing of those states of affairs which are represented in their theories as true. Thus (1) Phenomenalism makes this presupposition in tacitly assuming, *e.g.*, that *things-in-themselves* form a manifold, and act on transcendental selves, and that the "categorical machinery" of the transcendental self is known.[13] So also (2) Subjectivism both tacitly assumes and explicitly concludes that finite spirits, their ideas and "notions," God, and His ideas are not constituted or altered by the *knowing* of them—by some finite spirit (Berkeley, or any other subjectivist).[14] (3) Positivism tacitly assumes that impressions (sensations) and the copies of these, called ideas, can be known as they really are without being constituted or altered by those ideas in which they are known and to which they are related.[15] (4) Naturalism, Parallelism, Materialism, and Psychism, also, all frankly make the same presupposition regarding the knowing situation.[16] Each of these positions is, as we have seen, the result of an attempt to derive a philosophy by *extending and making universal* some rather special *scientific* view of the universe, although science for them is, seemingly, *limited* to astronomy, physics, chemistry, biology, and psychology, so that, owing to this shortsighted and inaccurate view, these philosophical positions are open to severe criticism. Nevertheless, as generalizations from a limited group of sciences, they all frankly admit, with these sciences themselves, that *the knowing and the entities known* are *both numerically distinct and externally related,* and thus *all rest on the solution of the egocentric predicament,* not only as regards that *general* state of affairs which is the content of their theory in each case, but also as regards the several more specific objects, qualities, and relations, the knowledge of which is presented in the *details* of their theory. At every point in their explicitly advanced doctrines, they therefore grant that the knowing situation can be examined by an analysis *in situ,* with the result that *knowing* is found to have no effect on the object as known, and that, although always present to the known world, it is present *as if it were not present.*

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[12] See the criticism of these positions in Chaps. XXIX.-XXXIII.

(5) Pragmatism also makes the same assumptions at a number of stages in the development of its explicit doctrines as well as in its fundamental principles.[17] Thus, *e.g.*, so far as Pragmatism is an extended and generalized doctrine of *evolution,* it

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[13] See Chap. XXIX.

[14] See Chap. XXX.

[15] See Chap. XXXI.

[16] See Chap. XXXII.

[17] See Chap. XXXIII.

explicitly accepts the solution of the ego-centric predicament. It is disloyal to this solution, and becomes self-contradictory, as do also Naturalism and Materialism, when the doctrine of *the evolution of all "things,"* including *knowing,* is based on the principle of a *universal causal interaction.* For, very evidently, if *all* "things," including consciousness and knowing, causally affect and are causally affected by other "things," then *knowing makes a difference* by its very presence, and things are not the same *as known* as they are when knowing is absent. *This conclusion* holds of the knowing both of the whole state of affairs and of all the details presented in these respective theories, although *quite the contradictory position* is presupposed in offering these as true theories suitable for popular consumption. However, to remain consistent with the principle which each of these theories actually presupposes in that it is advanced as a theory that presents facts, each must grant that *not all* "things" causally interact, but that some, particularly that complex object or *state of affairs* which forms the content of each theory, *and* the knowledge of this object, *do not. These two terms are externally,* and, as it were, functionally *related.*

(6) Monistic systems, for the most part, as we have already seen,[18] frankly admit that the ego-centric predicament is solved. This, indeed, is the very essence of their historical criticism of Phenomenalism.[19] Their one concern is to find evidence or proof for an Absolute One which shall *mediate all relations* between all terms, and manifest itself in the world of concrete entities or appearances. But monistic systems do not doubt that this One both in its essence and its activity in manifesting itself *can be known as it really is,* and thus be in relation to a *knowing,* and yet not be constituted or altered thereby. It is only in so far as *some* monistic systems are based on certain specific arguments,[20] that they are derived from the *false* proposition, *that the ego-centric predicament is insoluble.* Thus, *e.g.,* it is a thorough-going *phenomenalistic* argument, that, in the hypothetical absence of finite knowers, there must be *an infinite knower to give the otherwise chaotic world* the unity and order of certain relationships. This last is, indeed, a very modern monistic proof. So also is the argument, that, because all

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[18] See Chap. XXXIV. [19] See Chap. XXXIV. [20] See Chap. XXXVIII.

"things" are related and so affect one another, they are *all alike*, and therefore that the universe is *one in kind*. Against the first argument it may be said, that, if *knowing* in no case alters or constitutes the *terms* of the universe, it also need not constitute the *relations* of this universe; while against the second argument one may insist, until proof to the contrary is found, that even if all "things" are related, they may nevertheless be independent and not causally connected, and, therefore, *qualitatively different and unlike.* These alternatives to monism *are pluralism.*

CHAPTER XL

REALISM'S HYPOTHESES

THE central doctrine of Realism is obtained, therefore, by *the solution of the ego-centric predicament.* Knowing may not be existentially eliminated from the known world—indeed, it may even be granted, that, if we endeavor to think or to know a world as unknown, we but once again have a world that is known and related to knowing. But there is always the possibility that this knowing situation can be dealt with by an *analysis in situ,* and the discovery made, (1) that *the knowing* and *the known* are *numerically distinct,* (2) that these two terms are *related to each other,* and (3) that the *relation* between them is *external.* This hypothesis is confirmed by the several specific cases of knowing just examined. Therefore the assertion is justified, that in so far as Realism is identical with the solution of the ego-centric predicament and with that position which holds the theory of external relations to apply to the relation between *knowing* and *the known,* Realism is a position that is established by *empirical* methods and not by *a priori* arguments and assumptions. Accordingly, with this empirical proof at hand, *deductive* results by way of forming *further hypotheses* may be derived from the fact of the external or functional *relation* of knowing to the known object, and confirmation of these hypotheses be sought for. Some of these hypotheses are as follows:—

Knowing and known object may be qualitatively different

HYPOTHESIS I. If knowing and object known are numerically distinct and externally related, the former neither affecting nor constituting the latter, then may the two in some instances be *qualitatively different.* In general the external theory logically permits *very different* terms to be related, simple with complex, and qualitatively unlike with unlike. On the other hand, mutual causal influences make terms alike. Therefore, if related terms appear *qualitatively* different, and there is *no* reason for transforming this difference into a similarity, this difference may be accepted as *ultimate.*

Realism, so far as it is identical with the solution of the ego-centric predicament, would be quite compatible with the empirical discovery that all the existential entities of the universe are *like in kind.* But by common sense and science they are not found to be this, while the several demonstrations in Subjectivism, Positivism, Naturalism, Materialism, and monistic Idealism for such a likeness of all "things" are either *a priori* and so not empirical, or self-contradictory and so not valid. Therefore, in the absence of valid reasons to the contrary, Realism concludes, that *knowing* and *the known* are in many cases *qualitatively different, even as different* as empirical investigation and the results of the sciences show, *e.g., physical* entities and such non-existent *subsistents*[1] as number, space, and time, on the one hand, and *psychical* processes, on the other hand, to be. Only when one psychical process is *the known object* to another process as *the knowing process,* are *knowing* and *known object* (to this extent) similar, but this similarity does not result from any causal interaction between the two. Rather, it is purely incidental to facts,—namely, the facts of the universe, and thus is quite analogous to that similarity between points which is quite compatible with the dissimilarity between *all* points and *all* instants as two distinct classes.

With the theory of external relations empirically established for the relation between *knowing* and *the known*, and also with an empirical confirmation at hand for the logically consistent hypothesis of the dissimilarity of knowing and the known, the *further hypotheses* are derivable, (1) that external relations may subsist in a great many other instances in the universe, and (2) that a great many different kinds of entities may exist and subsist and be related in many different ways.[2] These hypotheses taken together mean a logically pluralistic "world," *i.e.*, a "world" or universe that is "made up" of many *different kinds* of entities, all related, but in qualitatively different ways, some causally, but others not, some dependent, but others not, and with no single underlying One to mediate all relations.

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[1] See Chap. XLIV.

Illusory objects are objective

HYPOTHESIS II. The second hypothesis that is logically possible if *knowing* and *known object* are numerically distinct and, in *some* cases, qualitatively different, and in *all* cases externally related, is, that at least many classes of so-called illusory objects are not constituted by the consciousness of them, but are quite as objective as are non-illusory entities. This hypothesis is again one that is confirmed by the results of empirical investigation, and thereby a disproof furnished of a certain specific argument that is often advanced in support of a position, namely, Subjectivism, which in some of its doctrines is diametrically opposed to Realism. Subjectivism in its position concerning the knowledge of *spirits* is, as we have seen, realistic; but in holding that the *physical* world is *not* numerically distinct from the percepts and ideas of it, but is identical with these, it is directly anti-realistic.[3] For knowing is thus made, not merely alterative, but *constitutive* of the physical world.

The logical and historical argument for this position proceeds, as we have seen, from the assumed subjectivity of *some* qualities *and* the impossibility of concretely experiencing a material *substratum*, to the denial of this substratum and the inference that *all* qualities are subjective.[4] But this demonstration is frequently buttressed by the further argument from dreams, hallucinations, errors of judgment, and both normal and abnormal illusions.[5] Thus it is claimed, *e.g.*, that dream objects are purely subjective, and then, by analogy, that *all* illusory objects are also of this character. It is then argued, that even the *normal* objects of the world about us may be, or, in fact, *are* but one common illusion or dream, and so entirely subjective.

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[2] See Chaps. XLIII.-XLVI. [3] Chap. XXX. [4] Chap. XXX.

One obvious criticism of this argument is, that the illusory and hallucinatory in any instance implies that which is *not* of this character, so that, if the one be subjective, the other must be objective in the sense of not being constituted by consciousness or by knowing. Yet this objective character need not be existential; it may be subsistential, and still meet the logical requirements of the implication.

But further it is a very general principle of procedure that, if a specific argument is based on *one alternative* when *other possibilities exist and are ignored,* then that argument is endangered when those other alternatives are considered. Precisely this situation, however, is found in the case of the argument, that illusory objects, such as the *seeming* convergence of the rails of the railroad, or the seeming bentness of a straight stick in the water, must be *subjective* or conscious in character, *because* (1) the parallelness and straightness are *objective, and because* (2) *objectively* the *coexistence* of the *contradictory* characters, parallelness and convergence, straightness and bentness, at the same place and time, is impossible. Surely it is to be admitted that the rails cannot be both convergent and parallel, the stick both straight and bent. But if for this reason it is inferred that consciousness is the locus of the convergence and the bentness, then may this inference itself be in error, provided there are other alternatives for solving the difficulty. But other alternatives there are. For the convergence may be a characteristic *of,* and have a locus *in, the relational complex,* light-traveling-in-straight-lines-from-each-rail-to-the-eyes, or to a photographic plate, and the bentness be a characteristic of *the complex,* light rays-coming-from-the-stick-through-the-refractive medium of water. This other alternative is, indeed, the scientific explanation in each of these cases. But this explanation is one which means that the different locus which is demanded by the principle of contradiction for the convergence and bentness is found quite as readily in *an objective relational complex* as it is in a consciousness or mind.

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[5] Chaps. X., XXX., XLIII., I., II.

With this the case there is a confirmation of the hypothesis that, if the *normal* object *and* knowing are related externally, are numerically distinct, and in some instances are qualitatively different, *with the known object objective in just these respects, so also may all illusory objects* and the *cognition* of them be *similarly* related.

It is clear, therefore, that if there is this alternative method for the solution of the problem of certain illusions, one cannot pass it wholly by, and conclude that the only locus for illusory objects in general is consciousness, and that *all* objects might analogously be conscious in nature. Yet it is just this procedure that is adopted by many philosophers who first *persist* in ignoring the alternative possibility,[6] and then insist that the crucial test of Realism is its ability to explain error, and that it fails to do this, and who finally infer not only that all illusory objects are subjective, but also that all objects may be.

It is by using the other alternative that the subjectivistic or idealistic argument and conclusion from illusions can be disproved, and the main realistic position once again be supported. For other kinds of illusory objects and other instances of error can be explained in much the same way as are the instances just considered. Thus, *e.g.*, it will be granted that, if the theory of external relations has the genuine inductive basis of a few *typical* instances, then there may be further instances for which it holds. One group of these instances is found in sense perception, and in perceptive judgments. One need not perceive *the whole* of an object correctly in order to perceive *part* of it as it really is. This is clearly the case, provided that, although two percepts are related, they do not influence each other. Thus the superstitious person's perception of a noise may be correct, but his interpretation of this as the fluttering form of a ghost be quite wrong. The ghost may not exist. The person's "taking" it to exist and to be moving about constitutes his perceptual error. It is just this "taking" a "thing" *to be what it is not,* that constitutes many kinds of error, *e.g.*, in the case of illusory and hallucinatory objects. But since even here there is a *scientific* explanation that makes these objects objective, one cannot safely ignore this and be free to infer that all such objects are subjective.

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[6] Lovejoy, *e.g.*, in his controversy with Cohen in the articles referred to in Chap. XLIII., I., II., III.

It is characteristic of all dreams and hallucinations that they never present self-contradictory objects. That which is known in these cognitive processes may not exist, but no character is ever presented in them that could not exist, or be a fact of some kind. In accordance with our previous arguments, such objects, therefore, may be called *subsistent.* They have the same status that have many objects of the imagination and the reason. But, unless the whole argument for *subsistents* is invalid, it is not to be therewith inferred that these dream contents are not as objective as any object is, only they may not be *existent* objects.

The philosophical position which accounts thus for illusory and hallucinatory objects and which thus holds to the *objectivity* of many other kinds of subsistents, as well as of existents, may itself be in error, of course. For we can only attempt to know, and there is no absolute test of knowledge. But such *a pan-objectivistic position*[7] has the advantage, that it is *self-consistent,* that it avoids many of the most patent errors of other systems, and that it does not fallaciously base its conclusions exclusively on one alternative, when there are other alternatives to be considered.

That many difficulties are present in the general problem of error, one must frankly admit, as also must one, that all of these difficulties have not been solved. But the evidence at hand clearly shows, that the method of procedure must be here, as it is elsewhere, the *empirical* one of analyzing data, of forming, if necessary, alternative hypotheses, and of awaiting the confirmation of these by concrete fact and by consistent agreement with other knowledge.

Relying upon this method, it would seem, that much that *in the past* has been regarded as *subjective* can with much greater justification be concluded to be *objective,* and that the final and irreducible subjective element in error is only the psychological

[7] See Chap. XLIV., II.

fact of "taking a 'thing' to be what it is not." If this is the case, then the solution of this problem belongs not so much to philosophy as to psychology, for this science can, perhaps, tell us *why* we take one "thing" to be another. But if psychology succeeds in solving this problem, its solution does not do away with the *objectivity* of all "things" that are thus confused.

This problem belongs to philosophy perhaps only in so far as each special science contributes its quota to that general philosophical account of things that is made up of all special accounts. In this respect the realistic and objective account of error that has just been presented is one that contributes its small share to the *ontological* and *cosmological* branches of philosophy.[8] For it shows that the universe is not made up merely of *things,* each identical with itself, yet similar to and causally acting on other things, but there are also events and relations of many kinds, and, as it were, disembodied qualities without a substratum, and existents and *non-existents.* Thus the objective universe contains not only the straight stick, but also the bentness; not only the parallel rails, but also the convergence; not only the rustling of the curtain, but also the flimsy ghost; not only the existent poisons, but also the imagined ones of the dream and the hallucination. In this manner does the realistic account augment the usually accepted *objective* richness and manifoldness of the world in which we live.

1. *Objects may be genuinely known:*
2. *They may become known and cease to be known.*
3. *Not all objects are known.*

HYPOTHESIS III. If the ego-centric predicament is solved in the *presuppositions* that are made by such philosophies as Phenomenalism and Subjectivism in regard to the *knowing* both of complex *states of affairs* as well as of particular classes of entities, such as things-in-themselves, spirits, and the like, and if this relation between knowing and entity known is an instance of external relations, *then the hypotheses are permissible,* (1) that the known object can be known as it really is, (2) that it may *become* known and *cease* to be known, and (3) that *not all* objects are known.

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[8] See Chaps. XLII. and XLIII.

The first supposition is, as we have seen, confirmed in the case of any theory that would present a real *state of affairs,* even, indeed, the *contradictory* one, that "things" *cannot* be known as they really are. For, whatever state of affairs is presented in a philosophy, it is offered as the *real* state of affairs, and therefore the *presupposition* is made that at least *some* "things" can be known as they really are. No *a priori* or logical obstacle can consistently be placed in the way of the recognition of this presupposition, since to attempt this, and to claim some opposed presupposition to be the state of affairs, is again to conform to this specific presupposition—that something can be genuinely known. But if *some* entities can be genuinely known, it is implied that other, perhaps *all* other entities may also be so known; and also, if no *a priori* argument can be brought against the *possibility* of genuine knowledge, even when such an argument is attempted (in some cases), it follows that the difficulties in the way of attaining genuine knowledge are empirical difficulties and not such as are *inherent* in the knowing situation. But empirical difficulties are removable by empirical means, as is shown by the fact that the actual development of the methods and technique of scientific (and philosophic?) investigation is in part identical with the discovery of the nature and conditions of specific errors, and of the means for avoiding these. Illusions, hallucinations, preconceptions, errors of measurement, and the like, have become understood, and their control and elimination has been achieved.

But although it is implied or presupposed that "things" can be known as they really are, still *it may be that few "things" are so known.* However, this *possibility* does not imply the *actuality.* But there is still the empirical difficulty that there is no absolutely certain test by which to determine whether or not *fact* has been thus revealed. The possibility of error is always present, and the best that one can do is to attempt to know, and to utilize as many tests as possible. Direct or immediate experience, consistency with other facts, the *convincing* appeal to the reasoning of *many* rather than of one, and the *survival* in the struggle for existence among theories, hypotheses, and methods as knowledge develops, are *all* tests of knowledge. Yet even if in this way no knowledge is obtained that is *abso-*

lutely certain, the situation is, nevertheless, saved by the principle, that *true knowledge is independent of the proof that it is such,* else were common sense and the earliest knowing of the race only error and *complete* illusion. One may conclude, therefore, (1) that other than those difficulties which may be removed by empirical methods, there is no obstacle to the genuine knowing of "things," (2) that, accordingly, if *some* things are *unknown,* they are not, for that reason, unknowable, and (3) that even though *absolute proof* be lacking, absolute knowledge is quite possible. But, if "things" are genuinely knowable, and if knowing makes no difference to them, then knowing may now be present to them and now absent from them, with "things" *becoming known* and then *ceasing* to be known. *Some* "things," therefore, at *some* times, are *unknown.*

This hypothesis is not invalidated by the argument, that *one can think the whole universe,* and that, therefore, everything is known, and that *nothing is unknown or unthought.* There is all the difference in the world between knowing "things" in a lump *and* knowing "things" in detail and with precision. Accordingly, when I think the whole universe—whatever this may mean—it may be that I should call this knowledge; but there is certainly *more* knowledge, if I can assert, with proof therefor, that the universe is, *e.g., a mere collection,* and not an organic unity. And there is still more knowledge, of a precise kind, if I am also perceiving, *e.g.,* that a particular organism under my microscope is *vorticella,* and if I am observing and understanding its behavior. Therefore, if thinking the whole universe is to be called knowledge, it is such a knowledge as allows of the *ignorance* of details, and *the absence of the knowledge of some entities.* Accordingly, we must conclude, not only that *all* "things" are not known, and are not in relation to specific *knowings,* but also that this fact is itself now known. Indeed this is the view that is taken in both common sense and science, and that is confirmed by the *scientific* investigation of the problem of the knowing.

This conclusion leads, however, to further interesting considerations. It has just been said that there is all the difference in the world between knowing "things" in a lump and knowing them in detail. The knowing process in both cases is a *specific* *event*, taking place at some specific time, in some individual, yet in the two cases *the object is known in a radically different manner*. I know that there are Chinamen, but I know no individual Chinaman. I may perceive a space as a whole, but I may be quite ignorant of the science of spatial relations. So also I may be able to *think the universe*, but may know little of its details. It is, therefore, evident that there are two kinds of knowing, and that the one does *not* imply the other, else from my *thinking the universe* as such, I might discover its *details*. But this possibility is not confirmed empirically. Rather, experience shows that the universe must be studied in detail and by analytic induction, and *not* by deduction from such propositions as "the universe is thought" or "the universe is One." Even if these propositions were true, the knowledge of the particular entities that make up the universe could not be derived from them, and such entities would remain unknown, were not other methods at our disposal.

When we ask the question, therefore, Are things unknown? our affirmative reply is not to be circumvented by the claim, that *all* "things" are known because they are thinkable as a lump-universe. The question refers to *detailed* knowledge, and such knowledge we do not possess of all "things."

With this limitation of the meaning of our question, we may next ask, Are *more* "things" known than are unknown? And the answer must be, seemingly, "Yes." The evidence for this answer is, that human knowledge encompasses *the main types* of "things," and that it is chiefly the subordinate and minor types, and matters of minute detail that yet remain to be known. This evidence is obtained by the "method of residues," in accordance with which, *if* phenomena are found for which other phenomena as *causes*, or as *conditions*, or as *independent variables*, and the like, are *not yet known, these explanatory entities must be sought for*, the need for this search being disclosed either by experimental analysis, or by the development of implications. As judged, now, by this *twofold* method, it may be asserted, that the main *types* of entities that "make up" the universe are known either descriptively, as in sciences like biology, or explanatorily, as in sciences like physical chemistry and mechanics, in which explanation, as correctly understood, means not to identify, but to correlate series of specifically different types. Such a correlation allows two or more qualitatively distinct series to "act" in conformity with one another, yet without identity with or the possibility of deduction from one another, and accounts for the empirical fact that most, if, indeed, not all of the entities of the universe are susceptible to a "treatment" by the science of order, *i.e.*, by *the principles of modern logic.*[9]

Other instances of external relations. The Freedom of Reason

HYPOTHESIS IV. If *knowing* and *known object* are numerically distinct and externally related, the former neither affecting nor constituting the latter, then not only is the knowing situation characterized by the *several aspects* of the external relationship, but also there may be *other instances* of the types of relations that are involved in the knowing situation.

It may well be that many terms are so related that they influence one another causally, but it is impossible to maintain in other than a very arbitrary manner, that this principle holds of *all* related terms *by virtue of their mere relatedness.* Indeed this cannot be at all validly maintained provided there are *one or more* instances of terms that are related and yet *causally independent.* One such instance, however, we have found to be the pair of related terms, *knowing* and *known object.* And another instance is the relationship between time, on the one hand, and motion and acceleration on the other hand. In this case time is the independent variable, motion and acceleration, the dependent variables; time is not the *cause* of these *changes,* nor are they the *cause* of it; yet time is the *condition* for their occurrence, although they do not condition time; were there no motion and no acceleration, there would still be time, but were there no time, they would be impossible.

Time is a one-dimensional *series* formed by asymmetrically and transitively related *instants.* In the case, now, of any specific finite, accelerated motion, one and only one specific velocity is related to a specific individual instant. Yet this instant is related also to other instants, and would *retain* this relationship even if there were no acceleration and no motion. Here, therefore, is a case of a term, namely, an instant, that is in one specific relation to other terms, *i.e.*, to *other instants,* and that can, nevertheless, without loss or change of this relation, *"come" into relation* with another (complex) term, namely, a velocity. Also, in the case of *that series of points which constitutes the path of a moving body, any one point* may *retain its relations* to other points, and yet *gain* and *lose* the specific relation of *being occupied by a material particle for an instant.* And finally, in the case of a specific *acceleration,* which is itself a series of individually distinct velocities, there is for each instant of the time and, also, for each point of the path (of the moving body) one and only one specific velocity, and not another. Each such specific velocity is gained and then lost—by both the point and the instant to which it is related. In each of these cases we have, therefore, an *external* and *not* a *causal* relation. Such a relation also subsists in the case of the relation between a specific acceleration *as a whole,* and the specific time and path (as wholes) to which the acceleration is related. The acceleration, the time, and the path are each a series, and the relation between them is *not causal,* but functional or external.

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[9] See Chaps. II., XXVII., XLI., XLIII., and XLIV., II.

However, with such instances of externally related entities before us, namely, of relational wholes in which *terms gain and lose specific relations to other terms without being affected thereby,* we must grant the possibility of still other instances of the same generic situation or state of affairs, and this possibility is shown by empirical observation to be an actuality. For there is evidence that, in at least certain instances of the knowing situation, the object known retains its relationship to other entities while its *gains* and *loses* the knowing relation. For example, that this is the fact, is *presupposed* for any object or entity being known as it really is. And since *some entities* and *states of affairs* are assumed or presupposed *to be so known,* even by those philosophers who *explicitly advance a different theory of knowing, one may generalize, and, until good evidence to the contrary is found,* maintain that only that theory of the knowing situation is correct which recognizes it to be an *indispensable condition* for genuine knowing, that the relation of the knowing to the object known may be gained or lost without this gain or "things" are related and so affect one another, they are *all alike,* and therefore that the universe is *one in kind.* Against the first argument it may be said, that, if *knowing* in no case alters or constitutes the *terms* of the universe, it also need not constitute the *relations* of this universe; while against the second argument one may insist, until proof to the contrary is found, that even if all "things" are related, they may nevertheless be independent and not causally connected, and, therefore, *qualitatively different and unlike.* These alternatives to monism *are pluralism.*

CHAPTER XL

REALISM'S HYPOTHESES

The central doctrine of Realism is obtained, therefore, by *the solution of the ego-centric predicament.* Knowing may not be existentially eliminated from the known world—indeed, it may even be granted, that, if we endeavor to think or to know a world as unknown, we but once again have a world that is known and related to knowing. But there is always the possibility that this knowing situation can be dealt with by an *analysis in situ,* and the discovery made, (1) that *the knowing* and *the known* are *numerically distinct,* (2) that these two terms are *related to each other,* and (3) that the *relation* between them is *external.* This hypothesis is confirmed by the several specific cases of knowing just examined. Therefore the assertion is justified, that in so far as Realism is identical with the solution of the ego-centric predicament and with that position which holds the theory of external relations to apply to the relation between *knowing* and *the known,* Realism is a position that is established by *empirical* methods and not by *a priori* arguments and assumptions. Accordingly, with this empirical proof at hand, *deductive* results by way of forming *further hypotheses* may be derived from the fact of the external or functional *relation* of knowing to the known object, and confirmation of these hypotheses be sought for. Some of these hypotheses are as follows:—

Knowing and known object may be qualitatively different

HYPOTHESIS I. If knowing and object known are numerically distinct and externally related, the former neither affecting nor constituting the latter, then may the two in some instances be *qualitatively different.* In general the external theory logically permits *very different* terms to be related, simple with complex, and qualitatively unlike with unlike. On the other hand, mutual causal influences make terms alike. Therefore, if related terms appear *qualitatively* different, and there is *no* reason for transforming this difference into a similarity, this difference may be accepted as *ultimate.*

Realism, so far as it is identical with the solution of the ego-centric predicament, would be quite compatible with the empirical discovery that all the existential entities of the universe are *like in kind.* But by common sense and science they are not found to be this, while the several demonstrations in Subjectivism, Positivism, Naturalism, Materialism, and monistic Idealism for such a likeness of all "things" are either *a priori* and so not empirical, or self-contradictory and so not valid. Therefore, in the absence of valid reasons to the contrary, Realism concludes, that *knowing* and *the known* are in many cases *qualitatively different, even as different* as empirical investigation and the results of the sciences show, *e.g., physical* entities and such non-existent *subsistents*[1] as number, space, and time, on the one hand, and *psychical* processes, on the other hand, to be. Only when one psychical process is *the known object* to another process as *the knowing process,* are *knowing* and *known object* (to this extent) similar, but this similarity does not result from any causal interaction between the two. Rather, it is purely incidental to facts,—namely, the facts of the universe, and thus is quite analogous to that similarity between points which is quite compatible with the dissimilarity between *all* points and *all* instants as two distinct classes.

With the theory of external relations empirically established found to have that "*structure*" which may be described as a *stratification* of the main types of entities. This stratification is due to the fact that each main type is *logically necessitated* or *presupposed* by that type which is logically subsequent, but which does not, conversely, imply or necessitate it. The following are some of the main types or strata of reality *in the order of their logical dependence,* the later named types being *logically prior* to the earlier named, the earlier named, *logically subsequent* to the later named. The order is: (1) psychical processes, subdivided, perhaps, in the order of their dependence, into (a) reasoning, (b) imagination, (c) memory, (d) sense perception, and (e) certain instincts and instinctive feelings; (2) animal and plant behavior consisting of reflexes and tropisms; (3) complex and also relatively simple physiological processes; (4) chemical and physico-chemical processes; (5) physical processes and "things," such as heat, electricity, light, moving bodies; (6) pure, *actual* motion in accordance with causes, as *specified* by the laws of Newton; (7) motion *in general, subsistential,* and not existential, in accordance with the *general concept* of cause, but *not* as this is specified by the Newtonian laws or the other orthodox mechanical principles; (8) space and time (it being difficult to say that either of these depends on the other); and (9) finally, the real numbers, positive and negative.

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[1] See Chap. XLIV.

There is doubtless opportunity for much correction and expansion of this list, since the application of the principles which it illustrates is to be determined only empirically. However, further details that are involved in this theory of the stratification of the universe will be considered in that part of this section which deals with the realistic and neo-rationalistic structure of the universe.[14]

We may now consider in some detail our second principle, namely, that "one and the same entity may stand in many relations to many entities, and may gain or lose at least some of these relations quite independently of others." The list of instances by which this principle is empirically confirmed is too long to enumerate completely, but a number of important instances may be presented.

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[14] Chaps. XLIII. and XLIV.

One of these instances is that of the motion of a material body, or of its center of mass. In this instance (1) *each point* remains identical with itself, *i.e.*, is that individual point, and (2) each point retains its relation to other points, and yet lacks, gains, and then loses the relation of *being occupied* at a specific individual instant by the center of mass. So also does the *center of mass* remain that individual center, and yet first lack, then gain, and then lose its relation of *occupying a specific point* for a specific instant.

These are examples of our principle as it is found in the world of *physical* events. By them it is shown, however, that certain *events presuppose* or imply entities that are *independent* of *some,* even if *not* of *all* relations. Those relations which form a *minimum,* and which can only with great difficulty be *postulated as absent* (if, indeed, they can be thus *postulated* at all), are *similarity* and *difference,* and *identity* or *individuality.* But *other relations, such as causation and correlation,* can readily be lacking.

An entity, such as a point or an instant, that is presupposed as an *ultimate,* non-complex element out of which *complexes* are "made," and that is related to other simple elements by similarity and difference, is *logically atomistic.* It may gain and lose other relations without prejudice to its own inherent character. But whether one can find among the *things* as opposed to the *events* of the physical world, instances of entities that are *atomistic,* and that could lose *all* of their relations *without being altered thereby,* is an open question. It would seem, of course, that at least *most physical things* such as plants and animals, chemical mixtures and compounds, *are* altered and modified by virtue of gaining and losing relations to other *things.* But it would also seem that this implies, on the one hand, *ultimate* entities, such as *atoms* or *electrons,* that can gain and lose relationships *without being altered* thereby, and that, on the other hand, through the *gain* and *loss* of *specific* relations, specifically new qualities and characteristics *appear* and *disappear.* In all such cases, however, the whole that results (from the gaining of new relations) is *not the mere additive result* of the parts, but is characterized by qualities which the parts do not possess. There is, in other words, *a non-additive,* *a creative synthesis.*[15] Recognition of this fact goes far toward solving such problems as are raised, *e.g.*, in biology between *vitalism* and *mechanism* in the issue as to the nature of the organism. For if a whole is *not* the mere additive result of its parts, then the organism, plant or animal, is marked by characteristics that are not to be found among so-called *inorganic "things,"* although its ultimate parts are only the same physical forces and chemical elements that are found in this inorganic realm.

But in addition to entities such as *atoms* or *electrons,* which in the world of material "things" seem to be *presupposed* as *unalterable ultimates, in order that the "things" composed of them may be alterable,* there also seem to be many other entities that can lose or gain certain specific relations without being altered thereby. Thus, if the relations won or lost can be those of *similarity* and *difference,* of *"greater than"* and of *"less than,"* of *inclusion* and of *exclusion,* then is there *no alteration* of the terms concerned, since *no causal relation of necessity accompanies these other relations. The causal relation may subsist side by side with, but not by virtue of other relations.* Indeed, *non-causal* relations subsist not only *among elements,* such as electrons, but *also* among the complexes that are made up of these elements, although the complexes may *also* be *causally* related. And yet in addition to *this* relation (among complexes) there may be other relations, the gaining or losing of which has *no modifying influence* whatsoever on the entities concerned, an illustration in point being the relations of similarity and dissimilarity, of "greater than" and "less than," and of inclusion in, and of exclusion from a class.

The same situation in respect to relations is found among the several other types of entities, namely, among psychical existents, and among subsistents, *only,* in the case of the former there are relations of causation, while, in the case of the latter, specific causal relations are absent, and other relations play the dominant rôle. As regards psychical existents, however, it would seem doubtful whether there are psychical elements analogous to the atoms and electrons of the physical world, although there are doubtless, among psychical entities, relations that are *not causal,* as well as those that are. Modern psychology is, as is well known, based on the position (or postulate) that causal relations are present among psychical entities. But the fundamental error here as elsewhere is to insist either explicitly or implicitly, that there are *no* terms that are *not causally* related, and no relations that do not of necessity carry causal relations with them. Such an insistence or postulation results in Pragmatism and Naturalism, yet it is one that can be as surely discredited as can anything in the whole field of science and philosophy.

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[15] Chap. XLIII., IV., V., VI.

There may, therefore, be no *psychical elements* after the manner of electrons and atoms, and yet there may be a causal relationship between *certain* psychical processes, and *none between others.* Thus, in so far as particular instances of consciousness *appear* and *disappear,* there are conscious *processes,* and the *opportunity for their causal connection.* But, also, in so far as entities,—including *states of affairs, subsistents* and *existents,* individual terms, qualities, relations, and events—*must,* in order to be known as they really are, *not be altered* by the process in which they are known, it must be admitted that they get into *the knowing relation, and yet that there is an absence of causation.*

Further, in so far as any psychical process, such as memory or perception, is *specifically different* from other "things," it is of itself *qualitative.* But this does not demand a *substance-like substratum* in which the specifically different quality shall *inhere. Some* of the entities of the universe may be *substances,* but certainly *not all are,* and some of those that are not, may, as it were, be *disembodied qualities* or entities that are *not qualities of anything,* but that are qualitatively different from other "things." There is a large field for investigation concerning these possibilities, and one cannot make dogmatic assertions as regards the details of the position, that *knowing and perhaps consciousness in general are qualitatively specific relations into which entities get when they become known.* But the evidence is strong *against* knowing and consciousness being either *substance* or *energy,* or *qualities of these* entities, and also against their being *causally related to all other "things,"* especially to the entity that is known.

While, now, both *psychical* and *physical* existents are in some, and doubtless in many cases, subject to *causation, subsistents*[16] lack this relation. Therefore the relations that do hold among these entities do not carry with them the further relation of causation and so either the mutual or one-sided *alteration* of related terms. Thus, among subsistents, one point does not cause, alter, or change another point, nor one instant another instant. Nor is space caused or modified by time, or conversely, though of course the two are related. Also the perfect circle is not caused by the *physically round things* that approximate to it, nor by the other geometrical figures. Yet *subsistent* entities are related to one another, and, in some cases, in such a way that one entity seems to necessitate, or be necessitated by others. *But this relation is one of implication*, and not of causation.

Whether, indeed, *change* of any kind is possible in the realm of subsistents, is an open question. If it is not, then relations in this realm cannot be won and lost as they are among existents, and yet, by the method of *analysis in situ,* it is discovered that certain subsistent entities are externally and *functionally* related, *after the manner* of those existents which do gain and lose certain relations without being altered thereby.

The hypotheses advanced in the foregoing discussion are also important because of their bearing on still other philosophical problems. For both the formulation and the confirmation of these hypotheses we have thus far found a number of instances (1) of terms that are related and yet that do *not causally affect* one another, (2) of entities that are *logically prior* to others, and (3) of terms that *gain and lose relationships* without being altered thereby. If, now, there are "these instances"—of this character, there may be still others, of similar character, and further *specific hypotheses* can be formed for the solution of specific problems.

One of these problems concerns the, for us, important situation, (1) that *the specific conclusions* which one obtains in endeavoring to solve problems by deductive reasoning are *conditioned* by the *assumptions* that one makes, either explicitly or implicitly, *to start with,* and (2) that one reaches *opposed results* by reasoning from *opposed assumptions.*[17] This very possibility, however, of *freeing* one's self from one universe of discourse, conditioned by *one* set of assumptions, and of then putting one's self into another "universe," leads to *the specific hypothesis,* that *any specific reasoning process is certainly not causally related to all other "things,"* and perhaps not even to *other conscious processes,* or even to other specific *reasoning* processes.

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[16] See Chaps. XLIII. and XLIV.

The meaning of this hypothesis must, however, be made more clear and precise. To do this, it may be again emphasized, that one of the main *postulates* of one great line of philosophical development is, that, although all "things" may be related in many other ways, they are also *all related causally* by virtue of being *related* at all.[18] This assumption is, as we have seen, the product of the domination, in the tradition, of the Aristotelian logic, with its emphasis of *the physical thing* as the great type phenomenon.[19] It is an assumption that conditions Locke's philosophy, and through this, Berkeley's and Hume's; it conditions Kant's Phenomenalism and the naturalistic systems of the Mills and of Herbert Spencer; and, finally, it conditions modern Pragmatism with its doctrine, that, because of universal causation, *all things evolve, with* a resulting (causal) selection of only that which is fit and useful. If, now, *causation applies to all* "things," *it applies to reason.*

Theoretically, therefore, *by this philosophy,* we are *not free* to reason, in order, in some cases, to arrive at genuine knowing, *but are forced by certain causes to reason in certain ways,* namely, in just the way, in each specific instance, that we do reason. For universal causation means not only that, Whatever is, is, but also that, Whatever is, *must* be. If, therefore, "to reason" be defined as meaning to discover and conform to (objective) relations of *implication,* success in reasoning thus would be a matter of mere *chance,* in that sense of the term *chance* by which it is identical with our ignorance of detailed yet ruthlessly operating causes.

In accordance, therefore, with any philosophy that maintains the universality of causation, no reasoning is free to discover relations of implication, but all so-called reasoning (in normal persons) bears the same relation of *causal determination* to, say, other mental processes, that the vagaries of the insane man do to certain dominating and distorting fixed ideas in his consciousness. The hypothesis of *a universal causation* is accordingly incompatible with our *freedom* to change from *one* set of assumptions or universe of discourse to *another,* and, if we do so change, it is only because we *must,* and *not because we may.*

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[17] See Chap. I.

[18] Chaps. XXIX.-XXXIII.

[19] Chap. III.

But at this point the interesting situation is disclosed, that *the very basis* on which this "causal position" is itself taken, in opposition to the "freedom position," is one that *presupposes the freedom, and not the causation of our processes of assuming and of reasoning.* For, briefly, we seem to be *free either* to *assume* causation, and reason from this assumption, *or* to *assume* the freedom of reason, and to reason from this. Thereby, however, the position or postulate, that all our postulating and reasoning is caused, is itself shown to be self-contradictory, and the opposed position, that there is a *freedom* in these processes, is shown to be self-confirming. The latter assumption is alone consistent with the way or manner in which it is made, namely, *freely,* while the former and opposed hypothesis contradicts *the very condition for its own making.* The advantage clearly lies with the second position.

As opposed, therefore, to the *naturalistic* and *pragmatistic* contention, that *all entities causally* influence, modify, and determine one another, we now have the hypothesis, that *among* the entities of the universe that are not connected with others by the relation of causation, *reason is one.* However, this does not mean that reason is *undetermined,* or that it is *lawless.* It means, rather, much the same as would a similar statement concerning time and space. These entities are *not caused* by anything else, *nor* are their parts, such as instants, points, lines, and the relations holding between these parts, *causally* connected. Yet each is a *field* in which *law* "holds good" and is inherent. In this sense each is *determined* and each has a *quale* which the other lacks.

Much the same thing can be said of reason. That reason is *not causally determined by something else* is the *one principle* on which one can explain that which is reason's specific function, namely, the *discovering of implications* as *the objective* *threads of necessity within a complex state of affairs.*[20] This is the *principle of the freedom of reason,* while the function of discovering implications is reason's peculiar *quale.* Performing this function in innumerable instances under varying specific circumstances, reason acts in accordance with law,[21] and is inherently determined; but in so acting it is not caused by, although it is related to, other events and processes.

This specific hypothesis of the freedom of reason receives confirmation from two sources. In the *first* place, as has been said, the freedom of reason is *presupposed* as the sole condition on which the otherwise machine-like *causal* grasp of tradition,[22] training, and personal predisposition on all our mental processes can be avoided. If it is open to reason *even to help* to discover "things" as they really are, then reason must be *free to conform to "things,"*—functionally, perhaps,—and *not be completely determined causally* by preceding mental processes after the *modus operandi in mente* of the insane man. And in the *second* place, if we may trust our direct experience, and not maintain contrary to or against it, that freedom is but *ignorance of detailed causes,* then again and again does each one of us receive direct confirmation of reason's freedom. This occurs in every case, where, *e.g.,* the possibility of error of judgment is granted, and the *re-examination* of grounds is urged. Also, that we can form *hypotheses* that are contrary to fact, then to discover the implied consequences of these, retracing our steps to begin over again, if error of judgment is surmised,—*that we can do all this* is experienced by all of us, especially by one who insists that *this very experience* is itself illusory, and that it is *really* an instance of *determination* by detailed *causes of which we are ignorant.* For does not he who is himself thus *convinced* of the correctness of the *naturalistic* doctrine, *endeavor to convince others,* thus *tacitly to presume* in them the *freedom of their reason to turn from the error of their non-naturalistic way to the truth of naturalism?* But does not the naturalistic and the pragmatistic philosopher thus contradict in a very practical way the very teachings and implications of his own philosophy?

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[20] See Chaps. I., XIII., I., and Chap. XXI.

[21] See Chap. XLIII., V. and VI.

[22] See Chap. III.

This principle of the freedom of reason to discover (objective) implications and to be determined by them and by the structure of that which is known *rather than* by preceding physical and psychical causes, is very similar to the principle of *the freedom of the will.* Both principles are opposed to the naturalistic doctrine of a universal causation, and yet neither means lawlessness. For both a free reason and a free will are related to other entities functionally and externally. Each forms a *new* and *higher stratum* of psychical existence that has its own peculiar laws of action,[23] and that is related to other strata, but not causally.

By free reason, now, we discover entities that do not exist but are nevertheless *facts.*[24] *States of affairs* holding of existent entities, relations of implication between these *states of affairs,* and logically consistent possibilities are examples of such facts. Thus only by free reason and not by sense perception, do we discover, *e.g., the perfect circle;* for this does not *exist* in nature, and so cannot effect us causally. Yet we *know* this entity, and from its implications can discover still other entities, and are actuated and influenced by it as an *ideal* object. In quite a similar way, reason, when it is directed to the discovery of ethical values, reveals *ideals,* which, although they may never have been realized in human development, nevertheless are of just that character,—as ideals—that they *demand realization* if possible.[25] The knowledge of these ideals may be said, in accordance with the terminology of Kant, to come through "practical reason," while the imperative demand, presented by them to human action and will, that every effort *ought* to be made to realize them, may be said to be given to *conscience.*

The hypothesis that there is such a freedom of the will by virtue of which one can act, *not* in accordance with what has been, but with what *ought* to be, is confirmed in two ways. In the *first* place, this hypothesis is presupposed as the sole condition on which a human being can *be* something other than a mere machine that is produced by heredity and environment, and that is *causally* compelled to do all that it does by antecedent physical and mental events. It is thus the sole condition on which a human being can be held responsible for his acts and his motives in any other sense than, *e.g.*, a stick of dynamite is held responsible for exploding. The dynamite is kept in a place where there are causes that prevent its exploding, or where, if it explodes, it will do the least harm. Such, also, must be the defense, *e.g.*, for *imprisoning* a human being, if he is completely determined causally, and cannot act in accordance with ideals, *thus* to hold himself responsible and to feel the command, "Do the right." To punish him for the sake of *revenge* only repeats the problem, since it means *either* that men must do this as themselves mere machines, *or* that society, in thus proceeding, acts in harmony with that *ideal of justice* which our practical reason gives us.

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[23] Chap. XLIII., v. and vi.

[24] Chap. XLIV., ii.

[25] Chap. XLV.

But in the *second* place, the hypothesis of a free will is confirmed by the direct experience of most men. Most men do have *ideals,* do feel their command, and do experience the freedom to obey this command and to go counter to the desires and impulses that are causally and instinctively rooted in human nature.

From the advocate of Naturalism the retort comes, however, that this direct experience of freedom is but the hypostatization of our ignorance of detailed causes, and that our so-called voluntary acts are really caused, though we do not know by what. The reply to this retort is, that even *causal complexes presuppose non-causal terms and relationships.* For example, every mechanism, and every *machine* presuppose time and space as entities that are not causally, but that are *functionally* related *to them.* In quite a similar way a human being can, physiologically, and, to a certain extent, psychologically, be a *causal* complex, and yet be related to and, indeed, be determined by entities which, like ideal justice, do not exist, but are nevertheless objective facts.[26] Discovered by pure and by practical reason, these entities appeal to conscience as ideals that are worthy of the highest regard, and that *in their own way actuate* a man to action quite as certainly as do causally-related entities.

These developments with reference to the *freedom* of reason and of will, and, in general, to *non-causal* relationships among terms, lead to *three further hypotheses,* which may advantageously be discussed together. These hypotheses are as follows:—

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[26] See Chap. XLV.

Philosophical problems not generated by their history

HYPOTHESIS V. If reasoning processes are *free* in the sense that they are *not causally* related either to other psychical processes or to the entities reasoned about, then, throughout the history of human thought, problems in philosophy and science have been problems, *not* because they have had a history, *but because they concern matters of fact.* In other words, *reason has been free to investigate fact, and to* ignore and challenge the tradition in every specific field of subject and of method.[27]

Truth an external and non-causal relation

HYPOTHESIS VI. If not all "things" are related causally, and if one and the same "thing" can stand in *independent* relationships to different "things," then *the nature of truth* may *not* be identical, as Pragmatism claims it to be, with causally determined concrete results, with efficiency, and with the production of satisfaction, *but* it may be an *external* and *non-causal relation between knowing and that which is known.*

The confirmation of this hypothesis invalidates the position of Pragmatism and of Naturalism that all that *survives* in a causal system of a general struggle for existence must for that reason be *useful,* and that truth is identical with this causal efficiency and usefulness.[28]

Analysis does not alter the "thing" analyzed

HYPOTHESIS VII. If *not all* "things" are related causally, then not only can an *analysis in situ* be made in at least certain instances, but also certain classes of entities can be *experimentally* removed from their context without thereby being altered, and in both cases the parts thus discovered can be revealed as they really are, both quite unaltered by the analysis, and in most cases as *qualitatively different* from the whole that is analyzed.

With this hypothesis confirmed, the *anti-intellectualistic* claim, that *all analysis as such is falsification, is invalidated;*[29] for *by it* the *discovery* of parts, whether these are left *in situ* in the whole, or are taken out of it, is possible, at least in many cases. The (act of) analysis does not itself alter the entity analyzed, and the only difficulties in the way of analysis are empirical.

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[27] Cf. Chap. I.

[28] Chaps. XXXII. and XXXIII.

The confirmation of the *first* of these three hypotheses is found in the facts of the historical development of both philosophy and science, especially science. Thus, even if there are certain exceptions, the sciences and most other "bodies of knowledge" concern matters *that yield problems,* not because these problems have had a history, but because they contain something of which we are ignorant, and of which we desire knowledge. The science of history is itself a good example of this principle, since history deals, not with the *history* of history, but with the facts of history, and the case is quite similar with biology, chemistry, and other sciences. Indeed, one may go so far as to say, that, if there were not always *questions of fact* for an inquiry that is unbiased by tradition, then would there have been no historical development of any science—at least there could have been no start, no first problem. But there have been first problems, and then new ones which, though they were suggested by previous problems, nevertheless concerned non-historical facts. The discovery by Galileo of the functional relationship between acceleration and time is a good example of both a problem and a method for solving it that primarily concern fact, and not history and the historical development of problems.

The bearing of this principle upon the history of philosophy is important. For by it one can recognize, in the first place, that certain problems *are* indeed created by their own historical genesis, and for that reason are often false problems. Thus, *e.g.,* the problem as to the *weight of phlogiston* in the latter part of the eighteenth century was a *false problem* that was created by the *antecedent* hypothesis (*current* in that century), that, all combustible substances contained a substance, phlogiston, which was given off when things burned. As a result a thing should be *lighter* after burning than before. When, however,

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[29] Cf. Chap. XXXIII., I. and II.

Lavoisier discovered that the products of combustion were *heavier* than the original substance, the discrepancy was accounted for by the further *false hypothesis,* that phlogiston was of *negative weight, i.e.,* that it possessed levity.

The very recognition that there is such an historical genesis of *some* problems is the touchstone, however, by which to distinguish in some cases between the true and the false. One thus becomes *free* and able to turn from those universes of discourse in which problems, methods, and solutions are determined by tradition, authority, and imitation, to *those* fields in which there is *unbiased, free inquiry* into what the facts are, irrespective of consequences. Indeed, to turn from *the traditional view,* that *all "things" are causally connected* whether by virtue of *being related* in other ways or for some other reason, *and to entertain the opposed hypothesis,* is a good example of that *freedom of procedure which is necessary if one would investigate facts and not continue the study of false problems.*[30]

In conclusion, it may be said, that the study of the historical and oftentimes distorting influences on the development of human thought may be of fascinating interest,[31] but that of equal interest and greater importance are the problems to which, whether they be new or old, reason turns in its cherished freedom of breaking from the past in order to look to the future. Even as the point divides the line into two *segments that are not causally connected,* so may reason release us from the thraldom of the past and place us in the freedom of a *realm of new inquiry that is unbiased by our desires and fears.*[32]

The second of our hypotheses, the anti-pragmatistic, is confirmed in a number of ways, though chiefly, perhaps, by the *tacit presuppositions* of Pragmatism itself. For, on the one hand, by the *implicit principles* of the pragmatic theory, there is, as has been previously pointed out,[33] no legitimate opportunity for the distinction between the true and the false, since, by these principles, *all that is still persisting* in the development of organs, functions, and the like, bears the stamp of either a present, a lingering, or a coming *usefulness.* Therefore, wherever there is occasion for applying Pragmatism's definition of truth, namely, that truth is identical with usefulness, one must say, that *all persisting* theories, laws, and ideas are true. The attempt to invalidate this conclusion by the argument, that it leads to the admission of *many contradictory truths,* fails of its purpose, since Pragmatism, by its own *preferred* tenets, accepts *no standard,* but allows that truth comes to each to whom *satisfaction* results from any idea, belief, theory, or law. For who shall say, that what is useless to one, is not useful to another? Then may not I make my own truth, and you make yours, even though the very *"holding of an idea to be true,"* as, *e.g.,* in the *belief* in immortality, is the *condition* for the *satisfactory working* of that idea?

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[30] Cf. Chap. I.

[31] Chap. XXVIII.

[32] See Chap. I.

[33] Chap. XXXIII.

This is Pragmatism's own explicit doctrine. No standard of truth, but many truths, *even as many* as there are outcomes that give the warmth of some satisfaction! No falsity—since everything that persists is useful in some sense—to some one!

True, therefore, must be *those great philosophical systems* that have so persistently stood the test of time, and that are useful, in the pragmatic sense, in that they give satisfaction to their adherents. Such systems include Phenomenalism and Objective Idealism. Yet, on the other hand, Pragmatism is itself a philosophy, in respect to a number of specific problems, that is advanced *as true in opposition* to these philosophies. Thus Pragmatism maintains *against* Phenomenalism, that, *e.g.*, there are no *a priori* principles which make up the unchangeable "structure of the reason," but that all such so-called categories are only specific *adaptations* and convenient modes of reaction. Against Absolutism Pragmatism maintains that, *e.g.*, the doctrine of an *unchangeable eternal standard* of *truth* and of *right* is false, and that these concepts themselves and all that may come under them are but ephemeral and changing ideas and ideals. And against Objective Idealism, Pragmatism holds, that there is *not* any One Absolute Spirit, Ego, Self, Reason, or Will. However, *in thus maintaining that these opposed philosophies are false* in such respects, and that it alone is true, Pragmatism grants a distinction between the true and the false, and thus is inconsistent with *its own explicit* doctrine, that whatever persists and develops and is satisfactory and useful in some sense is *a fortiori* true.

But Pragmatism departs from its own explicit teachings in still other respects. Thus, *as concerns itself, it presupposes an absolute truth,* such as certain opposed systems maintain, with the failure to obtain this truth due only to *empirical* difficulties, and not to an *evolutionary shifting* in truth itself. Also, in maintaining against other systems that, when the satisfactory outcome of an idea, a theory, or a belief is *itself the result of holding such an idea to be true,* this outcome is *not* a test or character of truth, Pragmatism grants that there is *a very fundamental difference between the test and the nature of truth.* Thus, *with respect to itself,* Pragmatism employs this distinction in maintaining that the successful working of its own theory is due, *not* to the *belief* in this theory, but to the fact that it represents or corresponds to *an objective state of affairs.* But it thereby "makes" *truth* a relation of, perhaps, *functional* correspondence between judgments and objective states of affairs, and presupposes, *tacitly,* at least, that its own explicit theory works successfully because or *in that it is true,* rather than that it is true, because it works successfully.

The third hypothesis, namely, that analysis is as reliable a method for discovering and revealing entities as are other methods, such as feeling and intuition, is confirmed in innumerable instances. Such a confirmation is reached by first noting that over and above an insistence on its empirical difficulties, there is no attack on *analysis*[24] *as such* that is not made *either* from the standpoint of the *dogmatic* assumption, (1) that non-analytical methods alone reveal facts, *or* from the demonstration (2) that analysis introduces contradictions at one or at many points, or (3) that it, by its very nature, alters and therefore falsifies the "thing" analyzed. The first, the dogmatic position, can be neglected, since it very evidently begs the very question at issue. One can with equal justification *dogmatically* maintain that analyses are made as a matter of fact, and do reveal entities. The second position, that analysis introduces contradictions, is found to be dependent upon the prior *misinterpretation* of correct analyses, *e.g.,* that the "elements" of motion are *rests,* and *therefore collapses* as an attack as soon as the actual results of (*correct*) analysis are correctly stated.

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[24] Cf. Chaps. XXII.-XXIV.

Accordingly only the third position needs a rebuttal at this juncture.

This rebuttal is readily found by first ascertaining what that *major* principle is from which this third position is derived. And that principle is readily seen to be the now familiar principle, that all "things" and entities that are related in any other way are perforce also related *causally*. From this principle several deductions are made. One is, that the very *act* of analysis *itself causally* modifies and so falsifies that which is to be analyzed; another is, that analysis can proceed only by *removing* certain entities out of their collocation and thus away from the causal influence of other entities, so that, *as analyzed*, any complex of parts is not the same as it is *as unanalyzed*.

Whether this position is disproved, and our hypothesis confirmed, finally comes down, therefore, to a question of purely empirical fact, namely, *Are there*, or are there not, instances of terms that are *not related causally?* To the writer it seems to be undeniable that many such instances are discovered. The relations that motion, acceleration, change in general, and matter bear to space and time are excellent instances. But this empirical fact, together with the fact that in many attacks on analysis the actual extant analyses are *misstated*, leads the writer to conclude, that the *modern attack on analysis fails at every point*, and that our third hypothesis (of the foregoing three) is empirically confirmed.[35]

In no case does the trouble lie with intellect or with analysis as such, but only with the *false* presuppositions that are made with reference both to the character of the relationship between the parts of a whole, *and* to the methods that are attributed to intellect.[36] Curiously enough, also, it may be remarked in conclusion, *all* attacks on analysis are themselves made by an analytical argument and method. The suggestion lies near, therefore, that the difficulties that may beset analysis are not inherent, but are only such *empirical* ones as are common to all methods of arriving at truth and fact.

These criticisms of Pragmatism and Anti-intellectualism lead to the formulation of two final hypotheses, which, as confirmed, make up further fundamental doctrines of Realism and of Rationalism.

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[35] Chap. XXXIII., i. and ii.

[36] Chap. XXXIII., i. and ii.

Individualism and Skepticism are logically false positions

Hypothesis VIII. If Pragmatism (or any other theory) either presupposes or explicitly accepts the positions, (1) that there is a difference between truth and falsity, and (2) that *it itself is true* in the *sense* that it is a theory to be *generally accepted,* then the *two* philosophical positions of Individualism and Skepticism, that are old in history, but that are today founded on Evolutionism, are false. Skepticism is false in *its* position, that there is *no* truth, if truth is an *absolute* definite relationship between the *state of affairs* to be known and the *knowledge* of this, and Individualism is false in *its* doctrine, that there are as many truths (in any sense) as there are individuals.

Analysis reveals facts, and Mysticism (of a certain type, at least) is false

Hypothesis IX. If there are innumerable instances of realities that are revealed by analysis, with this a method that is quite as well authenticated as is the opposed one of intuition and immediate experience, and also if any explicitly *anti-analytical position can itself be founded and defended only by analytical methods, then must analysis be accepted,* together, perhaps, with intuitive and immediate experience, as revealing *facts,* and any type of Mysticism that would deny this must be false.

Both Skepticism and Individualism are derivable, within the larger frame of Pragmatism, from the assumptions (1) that *Evolution* is universal; (2) that all "things" are subject to the rigorous sifting process of a universal causation; (3) that all surviving and persisting entities are only of instrumental value in the furthering of life; and (4) that truth is identical with usefulness. It is, now, particularly the second of these postulates that is the basis upon which both the Skepticism and the

Individualism *of the ancients* was developed.[37] For, if each individual is but a congeries of causally interacting atoms, then there is *little probability* that any two individuals will be the same; each individual will be peculiar to himself and different from every other; and, as between two or more individuals, words will not mean the same, nor percepts and concepts be the same, so that in general each individual is completely shut up within himself.[38]

Modern Individualism[39] merely adds to these ancient doctrines the further position, that each individual is in all respects the product of the universal *causal* process of evolution, and is, therefore, *in constant change,* so that (1) the facts and experiences of no two instants are ever the same, except by the rarest chance, (2) that only the *experience of the moment* is to be accepted, and (3) that anything general which might connect moment with moment must be spurned. Thus, as an advance on ancient Individualism, we have in the modern doctrine, owing to the influence of Evolutionism, *the individualism of the passing moment.*

Skepticism[40] also, as another conclusion from these same premises, lags not far behind its mate in running its race and spending itself. Indeed modern Individualism is one argument for Skepticism. For, if everything is quite concrete, particular, and individual, then there is nothing general, and if everything is shifting and sifting in a universal causal flux and flow, then there is *no place for truth* in the sense of *a common state of affairs* that is discoverable both to you and to me even as we change and grow and develop. But Skepticism, as thus derived from the (incorrect) assumption, that *all "things"* change and evolve, also means, that *truth itself must change,* and that there is *no* truth in the usual sense of the term. Indeed, in this evolutionistic scheme of "things," *truth* seems to be regarded as mere idea or concept that is psychical in character, and that is imbedded in the same causal flux and flow in which all other "things" are assumed to be imbedded.

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[37] Prominent among the Greeks and the Romans who held to the individualistic position were Protagoras, Prodicus, Gorgias, and Hippias, the sophists; also Democritus, Epicurus, and Lucretius; cf. the dialogues of Plato; also *Epicurus*, by A. E. Taylor, and *Marius the Epicurean*, 2 vols., 1910, by W. Pater.

[38] *E. g.*, Protagoras.

[39] Among modern individualists are Leibniz, Nietzsche, works ed. by Tille; Max Stirner (pseud.), *Der Einzige und sein Eigenthum;* also, implicitly, if not explicitly, many pragmatists are individualists.

[40] In the list of prominent skeptics are Pyrrho (365-270 B.C.), Carneades (213-129 B.C.), Ænesidemus (active 180-210 A.D.), Montaigne (1533-92), Pierre Bayle (1647-1706). Also Descartes in his method, and Hume in certain parts of his philosophy, are skeptics.

Skepticism is also derived by *an* (incorrect) *inductive generalization* from the admitted growth and development of science, philosophy, and religion, particularly from the *lack of absolutely certain knowledge,* and from the diversity of opinion in any field, at any time. It is argued that, since there is no absolute criterion of truth, and since what was *once* held to be true is not in every case now so regarded, *truth itself is always shifting*. The further conclusion is also drawn, that *truth as absolute is a non-entity,* or that it is only a word, or a particular, concrete experience, recurrent and at present useful, but open to elimination along with everything else that may no longer serve the needs of the living organism.

It is quite evident, however, from a little inspection, that some of these conclusions that are identified with Individualism and with Skepticism do not follow from the premises that are assumed. Thus, quite apart from questioning the *universality* of the causal relation and of evolution, one may doubt whether the fact of differences among individuals *precludes* the possibility of similarities, samenesses, and identities. However, Individualism, and perhaps also Skepticism, each insists on such a preclusion, and draws consequences from this. But both positions *contradict themselves,* since they both argue from the *similarity of all "things" in respect to their being in the causal relation, and* each also presents itself as a theory for *you and me to accept as true*. Each position *thus presupposes not only a state of affairs* that is *common* to and that holds of *many instances,* as, *e.g.,* the fact *of change, but also* such a *similarity* in our minds as enables us to *discover and agree on this state of affairs,* and, discovering it, have our judgments true. But thereby the valid principle is accepted, that, though "things" differ in *some* respects, they do not differ in all. But a similarity in psychical processes together with similarities and common states of affairs among objects known, furnishes an adequate and sufficient basis not only for *anti-individualism,* but also for *anti-skepticism.* Accordingly each of the theories under discussion presupposes the "anti-doctrine"; Individualism presupposes *the truth* of its own doctrine, and the *convincing character* of this on all right-thinking individuals, and Skepticism tacitly accepts the same presupposition. In short, both doctrines *refute* themselves in this way.

But also *from the fact* that, *e.g.,* certain theories, laws, and principles, which were once accepted as true, are now no longer so regarded, the conclusion does *not* follow, that there is no truth at all, or at least none accessible to man. Skepticism *in respect to itself* presupposes the direct opposite of this; *i.e.,* it presupposes not only that there is unchangeable truth, but also that it itself is a special case of this truth. But, also, in addition to this criticism, it may be said, that the lack of absolute certainty as to what is absolutely true does not preclude certain specific instances of knowledge from being absolutely true. *Certainty* has to do with, *e.g.,* the evidence and the testimony that influence our judgment and *convictions,* and is in some cases at least the causal effect of these influences, but truth is *a specific non-causal relation* between knowing and that which is known. Then *truth and certainty are not identical.* Therefore a judgment may be true, although we have no means whereby to become *certain* of it, while, conversely, in a great many notorious instances, men have been *certain of judgments that have not been true.* For example, at one time men were *certain* that the earth was flat, that animal and plant species were *immutable,* and that heavier bodies fell the faster, but these *certainties* turned out to be false. On the other hand, when these certainties began to be questioned, there were judgments, which, although men were not certain of them, were nevertheless true.

If *truth,* therefore, is *not* a psychical process that is concrete and *causally* related to other concrete and particular *existing* and *occurring* "things," but is a *non-causal* relationship between *the known* and *the knowing;* and, further, if *truth* is not the same as *certainty,* then it follows, (1) that common sense and science, philosophy and religion may all through their development contain *true,* although, perhaps, *not absolutely certain* judgments; (2) that there is an *ideal, if not an existent state of affairs that is identical with absolute truth; and* (3) *that this* very specific state of affairs may be *approached* step by step, by the winning now of one individual truth and now of another, with such individual truths *not causally modifying one another, although they are related.* A causal relationship, although it may in some cases hold between judgments, is precluded from holding between truths by the fact that these are not *existent,* but subsistent entities.

In thus formulating those positions which Individualism and Skepticism *tacitly presuppose,* yet explicitly deny,[41] we are also stating those positions which *any* other system, such as Phenomenalism and Idealism, *also presupposes,* and which are also *constituent parts* of Realism and of Rationalism. Systems make these presuppositions whether they will or no; therefore, if a system *denies* them explicitly, it is self-nugatory, while, if it accepts them, it is in this respect self-consistent. These presuppositions, which, as made by any system, whether it explicitly recognizes them or not, *confirm* Hypothesis VIII., and become incorporate principles of Realism and Rationalism, may be given the following formulation:—

All philosophical systems either explicitly accept or tacitly presuppose (1) that there is a *distinction* between truth and falsity (*e.g.,* as regards themselves and other positions) and, therefore, (2) that there is such an entity as *truth;* (3) that there are *similarities* among human minds whereby *this truth* can be attained by *many* individuals; (4) that *this truth* is *not* a concrete *causally* related "thing" or process, but a *non-causal* relationship between the known entity and the knowing; (5) that *this relationship* is one that is not identical with certainty, but that may subsist quite independently of proof and of the application of any criterion of truth,—indeed, in many instances, *quite incidentally;* and (6) that particular truths, although related, are not causally dependent, and do not modify or influence one another either positively or negatively.

From these propositions, which imply the falsity of both Individualism and Skepticism, and which yet are *affirmed* by all systems, even by Individualism and Skepticism in *their presuppositions,* it follows that *both Skepticism and Individualism are false, i.e.,* that they are self-refuting.

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[41] Cf. Chap. XLI., VIII.-XI.

A similar conclusion results in the case of Hypothesis IX., that, if there are well authenticated instances in which intellectual analysis reveals fact, then Mysticism,[42] of a certain type at least, namely, Bergsonian mysticism, and Anti-intellectualism[43] are false, and feeling, emotion, and intuition cannot be accepted as the *sole* method of approach to reality, with *only an instrumental rôle* granted to intellect. This conclusion is similar to the one preceding, because Anti-intellectualism and Mysticism, *if they are defended by argument, are self-refuting,* and if they are maintained *merely dogmatically,* are no better off in their logical position than are the opposed, *dogmatically asserted* positions of Intellectualism and analysis. Indeed, any position that is presented and defended by argumentation, proof, and the advancing of evidence not only *presupposes the validity and the trustworthiness of analysis* as a method of discovering *states of affairs* as well as other facts, but also presupposes the propositions just stated above as to the nature of truth, and the like. Feeling, emotion, intuition, and ecstasy may be means for getting at reality, or they may not, but at least that they are not the only means is presupposed by any position that is analytically defended, even though such a position explicitly develops the opposed view regarding analysis. The frank acceptance of these presuppositions makes *Intellectualism and Rationalism self-consistent* as regards at least this point, while the tracing of the implications of these presuppositions leads to the discovery of *entities* that are *real,* though they do not exist, and of relations that are *not causal.*[44]

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[42] Among the great mystics of history are the Neoplatonists of the third and fourth centuries A.D., such as Plotinus, Porphyry, and Jamblichus; also St. Bernard, Bonaventura, and Meister Eckhart from the eleventh to the fifteenth century; Thomas à Kempis (1380-1471). The "mystical quality" is also found in the great majority of philosophical works, notably in those of Plato, Philo, Augustine, Scotus Erigena, Roger Bacon, Duns Scotus, Nicolas of Cusa, Spinoza, Pascal, Schelling, Fichte, Schleiermacher, and all the recent objective idealists. Bergson also is to be ranked as a mystic.

General works on Mysticism are: Vaughan, *Hours with the Mystics,* 2 vols.; R. B. Jones, *Studies in Mystical Religions;* Wm. James, *Varieties of Religious Experience;* Evelyn Underhill, *Mysticism.*

[43] Cf. Chap. XXXIII., I. and II.

[44] See Chap. XLIV.

CHAPTER XLI

THE PRINCIPLES OF REALISM

At the beginning of this section the statement was made that the central doctrines of Realism and Rationalism are derived from the criticism of opposed positions. This criticism, however, is specific. By it there are discovered certain *propositions*, certain *states of affairs* which opposed systems presuppose and imply. Anti-Intellectualism, Mysticism, Individualism, Skepticism, Pragmatism, Naturalism in its several branches, Positivism, Idealism, and Phenomenalism are the main positions criticized. The *nine hypotheses* just discussed are suggested by this criticism, and for these confirmation has been sought and found. The Realism with which these hypotheses are identical is a position that accepts at *face value* the entities which are revealed by reason as well as those which are given by sense experience and emotion, and that, therefore, *consistently allows its own rational defense and establishment as presenting an objective state of affairs that is independent of being known*. It is, therefore, a realism of *subsistents* as well as of *existents*, of *principles* and *ideals* as well as of physical and mental entities, and of *non-causal* as well as of *causal relations*. Since some of these characteristics distinguish this position from previous realisms, *e.g.*, from Scotch Realism,[1] it may be called the New Realism. But also it is *new* in its Rationalism. For not only does the logic of Aristotle serve the master, reason, but also that other new logic which is found to be inherent *in* and *among* the complex entities and situation with which reason deals.[2] Rationalism by recognizing and using this logic is able to solve many a problem that is insoluble by other, older methods.[3]

This Realism and Rationalism may now be stated in systematic and positive form as a *constructive system* which shall have the title Detailed Realism, or The Realistic Structure of the Universe. In presenting this position we shall give the realistic and rationalistic solution of *the main philosophical problems* that are outlined and analyzed in Section II. of Part I.

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[1] The position of Reid, McCosh, and others.
[2] See Chaps. XXI., XXV., XXVII., XLIII.
[3] Cf. Chaps. XXII., XXIII.

Antecedent and basic principles of this detailed Realism and Rationalism are, however, the several *confirmed hypotheses* that have just been presented in Chapter XL. These hypotheses, however, involve certain (other) principles which should now be presented in systematic form as the principles of a *constructive* position and system. These principles are presupposed by every philosophical position or system at least at that point where such a system finds an (objective) state of affairs which it *presents as true,* and which it *discovers, analyzes, and defends by reason.*

The presentation of these principles in *systematic* form is possible through the discovery, *in* and *among* them, of a specific *logical order,* which is that of *logical priority.* This order is observed in the sequence in which the principles are presented, *logically prior* principles being presented antecedently to *logically subsequent principles,* with the possibility of *error* in detecting this order always granted.

The Principles

I. *There are propositions.*

II. *There are terms and relations.*

Discussion: It is difficult to determine which of these two principles or presuppositions is logically prior. For, on the one hand, a *proposition is* terms-in-relation,[4] and therefore seems to *presuppose both terms and relations.* But, on the other hand, if any philosophy presupposes that *there are terms and relations,* such as the relations of implication, similarity, and difference, "member of," and inclusion, then Principle II. *is* itself this presupposition. But this presupposition is itself a *proposition,* and therefore *presupposes* that *there are propositions.* Also, that *there are propositions* is *presupposed by itself,* since *it* is a proposition. This principle thus applies to itself, or is *reflexive.* Any philosophy, even one that *denies* this, presupposes that *there are propositions.*

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[4] Chap. XIII., I.

It is also difficult to determine whether it is *terms* or *relations* that are logically prior each to the other. On the one hand, it might seem that, if there were *only one term,* there would be *no* relations, *i.e.,* that "a relation is a character that an object possesses as a member of a collection (a pair," etc.),[5] and that, therefore, *relations presuppose terms.* Yet, on the other hand, one term might be *in relation to itself; e.g.,* a term might be identical with itself, with the result, that neither "*term*" nor "*relation*" is logically prior to the other.

However, it is doubtful if a *philosophy* does not presuppose more than one term. But, if there *are* (many) terms, there *are also relations,* at least those of *conjunction* (symbolized by "and") *and* of *similarity.* For terms are at least *similar, as terms.*

With these points elucidated, we may next consider certain important *relationships* between Principles I. and II., *noting* that, *if* there *are* these *relationships,* then *each* of these Principles *must itself* be a (complex) *term, i.e.* (at least by the definition quoted above), relationships *imply* terms. But, if this is the case, then it is *presupposed,* that *there are relations of implication.*

But there *are* relationships between Principles I. and II. Therefore these Principles are *terms;* therefore, again, *as terms,* they are *similar*—and similarity is a relation. But Principles I. and II. are each *terms in relation,* and each is a proposition. *Therefore* (1) *as terms,* they are each complex, and so, again, *similar,* and (2) at least some terms-in-relation are propositions.

Whether all terms-in-relation are identical with propositions may be open to question, but if there are some terms-in-relation that are not, it is difficult to know what to call them. Yet that all terms-in-relation are propositions is shown perhaps by the fact (1) that it seems to be empirically ascertainable that whatever *implies* is a proposition (since *typical cases* are *propositions that do imply*) and (2) that all or any terms-in-relation imply (since, whatever a relation, R, may be, any complex $x\ R\ y$ implies or necessitates the inverse, $y\ \breve{R}\ x$.[6] The identity of propositions with terms-in-relation would, therefore, seem to be empirically established.

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[5] Royce, in his essay on the *Principles of Logic;* see Chap. II.

[6] See Chap. XIII.

By this definition, then, Principles I. and II. are each a proposition; for Principle I. *is* a relation of *inclusion* of *propositions* in the class of "'*things*' *that are*," *i.e.*, the class, *entities*, while Principle II. is the relation of inclusion of *terms* and *relations* in this same larger class.[7]

Further analysis of the "state of affairs" that is identical with Principles I. and II. would reveal the presence in it of a number of other relations than those thus far discovered—*e.g.*, there are the relations of (1) *difference* of *terms and relations*, and (2) "member of," for Principles I. and II. are each a "member of" the class, *propositions*. However, into the further discussion of these refined matters we need not go, since it is more important to consider the several types of relations that "give" propositions, *and* to recognize the fact that there are *other propositions* than those which are accepted in the *traditional logic*.

The traditional logic is, as we have seen, one that makes almost exclusive recognition of *"class"* and of *"subject-predicate"* propositions. The latter, however, can be translated into the former. Thus the proposition, "a stone is hard," while it is identical with the relation of the *inherence* of the quality *hardness* in the subject, *stone*, becomes, by translation, "stones are hard objects," where it is identical with the relation of *inclusion* of the class, *stones*, in the larger class, *hard objects*. The relationship of inclusion by which some propositions are generated, may be, as we have previously seen, complete, partial, or negative. The relation "member of" (a class) also "gives" propositions that are illustrated by the proposition, "this object (that I am now holding) is a pen."

But there are other relations than those just mentioned, and, therefore, *other propositions* than those which the traditional logic recognizes. Such a distinct class of propositions may be called "relational" to distinguish them from "class" and "subject-predicate" propositions. Indeed it may be said in general, that all those relations that are present in *series* or in *complexes of series*, and the like, give *relational propositions*, although, "side by side" with these, "class" and "subject" propositions may also be present. Thus, to illustrate, the *several* relations that are present in *that* relational complex which *is* accelerated motion, give, most of them, relational propositions. For example, "the instant *A* *precedes* the instant *C*," "the instant *B* is *between* *A* and *C*," "the point α is in *one-one correlation* with the instant *A*," are all propositions that are *not* generated by relations of *similarity*, *"member of," inherence*, or *inclusion* of any kind. Evidence that there are these relational propositions is given by the historical fact, that, in order to deal adequately and precisely with such complexes as accelerated motion, it was necessary to develop radically new methods of reasoning, such as *the calculus*. Indeed the greater part of modern exact science is identical with the knowledge of such relational propositions and with what they *imply*, namely, other relational propositions.

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[7] Cf. Chap. XLIV., II.

This suggests our *third principle*, which is *presupposed by any system of philosophy that is reasoned either in its detailed doctrine or in its defense*, but which also seems to be *logically subsequent* to the fact that there are entities, namely, *propositions*, such as Principles I. and II., that imply.

III. *There is* (*the relation of*) *implication.*

Discussion: The problem of implication, its nature, and the conditions of its occurrence, is one of the most difficult problems in all logic and philosophy, as it is, also, a problem that is most *infrequently* considered. However, the attempt to examine it has been made at a number of junctures in this volume,[8] with the result that it has been found (1) that the relation of implication is a *specific* relation that subsists between *propositions;* (2) that it is, like other relations and terms, objective in the sense that it is *neither* a creation of *nor* a law or concept of the knowing mind; (3) that it is identical with a relation of *necessary connection* between propositions, whereby, *if* proposition *A is*, proposition *B must be;* (4) that it is logically subsequent to some other relations, in that it depends on them, although they do *not* depend on it;[9] (5) that, therefore, it is a specific relation that is *not itself implied*, but that merely *co-subsists* with certain other relations; (6) that it is *specifically*

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[8] See Chap. XIII.

[9] See Chaps. XIII. and XXI.

different from *consistency and contradiction;*[10] (7) that it is a non-symmetrical and transitive relation,—which allows for its *occasional* symmetry, if not for its intransitivity.

To enumerate and present all those types of relational complexes, and all those types of relations that carry with them the relation of implication would demand that we should examine all those situations that permit of *correct* inference. Such a complete examination of the *implicative* situation is, however, not necessary to our purpose, but, instead, the presentation of a few typical instances will suffice.

1. Every relation, *e.g.*, every dyadic relation, symbolized by $x\ R\ y$, is one that gives *a basis* for the *implication* of its *inverse*, $y\ \breve{R}\ x$. It would seem, then, that, if there were the very minimum of relations, namely, those of conjunction, expressed by "and," and of similarity and, perhaps, of difference, there would *also* be *implication*. For *A and B* implies *B and A,* as does also *A similar to B* imply *B similar to A*.

2. In the very typical case of the relation of *inclusion* of one class *A in* another class *B* that *in turn* is included in a class *C*, there is the relation of implication, for it is implied that *A* is included in *C*. Here two propositions, $A\ R\ B$, and $B\ R\ C$, with neither implying the other, *imply* a third, $A\ R\ C$. This is the case also where an asymmetrical and transitive relation relates, not classes, but the *individuals* of a series. Thus, if $<$ be the sign for any relation, such as "before," "greater than," and "ancestor of," whereby *serial order* is generated among individuals, then $A < B$, *and* $B < C$, implies $A < C$.[11]

These are instances of propositions that imply other propositions, but there are also certain propositions that *do not* in the least seem to be *implicative* of others. For example, "*A* is taller than *B*" does not imply any "*blood relationship*" between *A* and *B*, and "*A* is similar to *B*" does not imply that either term precedes the other. *Implication,* therefore, *seems to subsist between some propositions, but not between or among all.* Therefore, where it does subsist, there must be certain other relations on which it rests. However, that *implication is objective,* is

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[10] See the next two discussions.

[11] For further typical implicative situations, see Chaps. XIII., I., and XXI.

itself a proposition that is implied by whatever propositions are employed in *any argument* either *pro* or *con* its hypothetical *subjectivity*. For, if one does not dogmatically assert, *e.g.*, the *subjective* character of implication, but endeavors to *demonstrate* this, then *to the investigating mind* the propositions that constitute this demonstration and the relations between these propositions are *objective, and among these relations is implication.*

That *implication* is sometimes *symmetrical* is shown by discovering specific instances of its symmetry. One such instance is the complex situation or state of affairs, *that* (1) *if* the relation R of a to b is, *e.g.*, the asymmetrical relation "greater than," then the inverse relation, $\breve{R}$, is "less than"; but that (2) between the two complexes, $a\ R\ b$ and $b\ \breve{R}\ a$, there is, in addition to this "first" relation of "inverseness," the relation of *implication*, for any relation $x\ R\ y$ *implies* its *inverse* $y\ \breve{R}\ x$, as we have seen; calling *this particular relation of implication* between $a\ R\ b$ and $b\ \breve{R}\ a$ the relation R_2, it is then to be seen that (3) the complex $(a\ R\ b)\ R_2\ (b\ \breve{R}\ a)$ implies *its* inverse, namely, the complex $(b\ \breve{R}\ a)\ \breve{R}_2\ (a\ R\ b)$; so that (4) R_2 *"here"* is symmetrical.

However, in most instances *implication* is a non-symmetrical relation in accordance with the definition that "a relation is non-symmetrical if it is such that it *de facto* precludes the identity of the inverse with itself" (the original relation). This non-symmetry is illustrated in the relationship between time and motion: motion implies time, but the inverse relation, that of time to motion, is *not* one of implication.

IV. *There is the relation of contradiction.*

Discussion: Although it is, doubtless, somewhat difficult to discover the exact character of this relation, it is readily demonstrated that any system of philosophy *presupposes* it. For whoever *both asserts and denies*, conforms logically to *this principle* as holding between that which is respectively *asserted* and *denied*. Thus, *e.g.*, to *deny contradiction* (as a specific state of affairs in the universe) is to *presuppose it*.

The difficulties in the problem lie in the concept of the *negative*, with which *contradiction* seems to be most intimately connected, if, indeed, the two are not identical.[12] Thus, *e.g.*, one finds it stated, that contradiction subsists both between *classes* and *propositions*, but that its definition for either of these cases *depends* on the concept of *negation*. This is very *evident if*, for example, the contradictory class, symbolized by $\bar{x}$, is defined, in relation to a positive class, x (which itself is "defined by a certain norm"), as the class that consists of whatever objects are *not* x.[13] It is also *quite as evident*, if, *e.g.*, the *contradictory* of the relational proposition, "*A* is greater than *B*," is defined as "*A* is *not* greater than *B*."

To understand *what contradiction is*, seems to demand, therefore, the understanding of the concept of the *negative*, or of *negation*. But here again difficulties are met with, if, *e.g.*, an endeavor is made to understand the *negative* by first understanding *zero*, only in turn to define *zero* by the use of the *negative*. This circle is committed in Mr. Russell's discussion of his view "that numbers are properties of general terms, *not* of physical things or mental occurrences," so that "'one' is not a property," *for example*, "of the moon itself," but only "of the general term 'earth's satellite.'" "Similarly, 0 is a property of the general term, 'satellite of Venus,' because Venus has *no* satellite."[14]

However, some light is thrown on the nature of the negative and of contradiction by considering the nature of the number *zero as this occurs in the number series*. Briefly, we will say, that the number *zero* and the *negative numbers* are *implied* by removing the limitation from the *operation of subtraction*, so that the *greater* whole number can be "taken from" the lesser, as well as the lesser from the greater; *i.e.*, so that $x - y$ is possible, *whatever "values"* x and y may have. Subtraction is the *operation* or step of "going" (perhaps that of moving our attention)—in the *series* of numbers—from that which *follows* to that which precedes, while addition is the inverse step of "going" from that which precedes to that which follows. Thus these two operations are defined by reference to *series*.

If, now, + before a number represents the operation of

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[12] Chap. XVI.

[13] Royce, Essay, *op. cit.*, p. 108.

[14] *Scientific Method in Philosophy*, p. 202. Italics mine.

addition and — that of *substraction,* as, *e.g.,* + 5, and — 5, *and* if we start with a whole number 5, carefully distinguishing between the status of *signed* numbers and of *unsigned,* then + 5 is a step "forwards" by which we "go" from 5 to 10, and — 5 is the step "backwards" by which we "go" from 5 to *0*. Therefore, the steps — 6, — 7, and the like, taken from 5 as a "starting point," bring us to the *negative numbers,* — 1, — 2, etc., respectively.

It is to be noted here, however, that the *sign* which is sometimes interpreted as a *negative* sign, first stands for *a very positive "thing,"* namely, for the *step or operation* of "going" from *greater* to *lesser*. The same conclusion results, also, from the further examination of the negative numbers themselves, and of zero. This examination shows, in the first place, that *the negative numbers are implied facts,* and are, therefore, in some sense *entities,* namely, subsistents;[15] and in the second place, that we are *as free,* in performing successively the operation + 1, to start with a *negative number* or with *zero,* as we are to start with a *positive whole number*.

There may be many other considerations that bear on the nature of the *negative,* but, in the opinion of the writer, all of these lead to but one conclusion, namely, that the number *0,* the *negative, negation,* and *contradiction* is in each instance something that is a *positive content of experience.* This content may be the positive fact of, *e.g.,* a *difference* in the *"sense"* or *direction of a series,* whereby we speak of "backwards" and "forwards"; *or* the *difference of individuality,* as when we speak of the points (apexes), *A, B,* and *C* of a triangle, or the *difference of qualities,* whereby there are the classes, *X* (animals) and *Y* (plants). In *each* of these instances *either* or *any of the positive terms* can be symbolized by the prefix *"not."* Thus "backwards" is "not-forwards," points *B* and *C* are *not-A, animals* are *not-plants,* and conversely. Yet this negative prefix does not do away with the fact, that *the differences among these entities are positive,* although they are open to a negative characterization in relation to one another. These differences subsist at different and numerically distinct *loci* that are *logical,* and, also, in *some* instances, spatial and temporal in character. It is, now, this *factual diversity and difference* of the entities of the universe that is that universal fact of *exclusion* with which contradiction is identical.[16]

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[15] Cf. Chap. XLIV., II.

It follows that such a formulation of the principle of contradiction as the very usual one of the text-books that "a 'thing' (entity) cannot *both be and not be* a certain quality" (*e.g.*, that the motion of a falling body cannot be both continuous and *not continuous*) is in reality only *a restatement* (1) of the empirically discovered fact, that *certain* characteristics *do* subsist at different *loci*, *plus* (2) *the unjustified conviction* that they *cannot* have the same locus. For many attributes which *have been regarded as necessarily exclusive, e.g.*, finiteness and infinity, are now known to cosubsist, as, *e.g.*, in the case of a line, which is infinite in respect to *points*, but finite as regards *smaller lines* as components.

From this example it may be seen that to discover *what* entities exclude one another, and what do not, is a wholly *empirical* matter. Therefore the only norm that *is really* offered by the principle of contradiction is, that one should *not* think or "*take*" two or more characteristics or entities that are found *empirically* to have different *loci*, to *be* at the same *locus*. *Any two contradictory entities* can *be* at different spatial and temporal *loci*, or at those logical loci that are called "universes of discourse."

Self-contradiction subsists, at least in the case of *propositions*, when characteristics that are (found *empirically* to be) exclusive are *brought* in some way into the same *locus*. Thus, *e.g.*, the statement, "there is no truth," is self-contradictory, because it *presupposes the truth of itself as present in a universe of discourse from which, by its own meaning, truth is absent.* The difficulty is resolved by the subsistence of two "universes," excluding each other, in one of which *truth is present*, in the other, *absent*. Thus the two propositions, "there is some truth," and "there is some *not-truth*," are *both facts*.

In two ways, therefore, *any* system of philosophy *presupposes* the *relation of contradiction*. *One* of these ways is, that there is *a diversity* of entities in the universe, and that among these there are *empirically discovered exclusions*. The *negative*, or the *contradictory*, is merely *another name* for any one entity, simple or complex, that is in relation of some kind of difference to another entity or entities, with the two subsisting at different *loci*. Thus when we say, having set out to *classify* any region of our world, real or ideal, that "with reference to a given norm," the individuals of that region will belong either to the class x or to its contradictory class $\bar{x}$, we mean, that, if these individuals are *not* in one *locus*, they are in the other, with *both realms equally positive in character*. The other way in which *contradiction* is *presupposed* is *normative* in character. It means, that *the error should not be committed* of "taking" entities that are diverse in character and that subsist at different *loci*, to have *the same locus*. This norm af thinking should, of course, be observed by any philosophical system.

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[16] Cf. Chap. XLIV.

V. *There is consistency.*

Discussion: The two foregoing discussions of *implication* and of *contradiction* bring us to the discussion of *consistency*. It is, perhaps, doubtful if consistency is a relation, and therefore also doubtful if a system of philosophy presupposes *such a relation*. Yet that a philosophy must be consistent *is* a presupposition or demand that is made by all philosophies, although one may ask, whether this means more than that a philosophy must *not* be *self-contradictory* in the sense in which we have just defined this term. Such self-contradiction is illustrated by any philosophy which maintains that *all* terms are causally related, and, therefore, mutually modify one another; for this means that, *logically, knowing* and *object known* are no exceptions to the rule, and that, accordingly, *knowing* affects the object (to be) known, so that *no* state of affairs (or anything else) can be known without being modified. Such a position, now, logically brings itself, as a *specific knowing* of a *specific state of affairs* (the above theory) within this realm in which genuine knowledge is impossible, but it thereby precludes, or makes it impossible, that that knowledge with which it as a philosophical position is identical, should be what it is *presumed* to be, namely, genuine knowledge. Thus the position invalidates itself. To recognize that any philosophy presupposes and is under obligation to conform to *consistency* in the sense of the *absence* of such *self-contradictions* as that just presented, would seem to be a *minimum* requirement to ask any philosopher to observe.

The specific self-contradiction just presented is avoided by accepting the *two* propositions, that *"some* 'things' *are* causally related," *and* that *"some* 'things' *are not* so related. But, if *self-contradiction is to be avoided,* it may well be that *mere* contradiction, as identical with the relation of difference between entities that subsist at different *loci,* is not only presupposed by *all* philosophies, *but also is identical with consistency.*

Paradoxical though it may seem, thus to identify contradiction with consistency, and to maintain at the same time, that *consistency is independent of implication,* the empirical examination of the evidence at our disposal nevertheless seems to lead to this conclusion. All facts and entities are, just because they *are* facts and entities, consistent with one another. If they cannot cosubsist, or coexist, "at" or "in" the same *locus,* then they must be at different *loci,* or in different universes of discourse. Conversely, the hypothesis, that there are different universes of discourse, allows for the factuality of all entities that are experienced. Inconsistency is present, then, as an error, only when entities which factually are exclusive and have different *loci* are "taken" to have the same *locus.* But entities *as diverse* and *as in different loci* may be quite unrelated by *implication,* as can be shown in innumerable instances.

These developments concerning contradiction, consistency, and implication may be illustrated to advantage by an example from the scientific field. The geometers, Lobatchewsky, in 1829, and Bolyai, in 1832, each succeeded in working out a *consistent* system of geometry that differed from the traditional geometry of Euclid in respect to the postulate and theorems that concern *parallels.*[17] Euclid *assumed,* in "axioms" and theorems, that through a point *P,* outside a line *L* there is only one line parallel to *L.* Bolyai and Lobatchewsky, however, assumed that there is an *infinite number* of parallels through *P,* and then developed the implications of this and of the other *usual* postulates, one of these implications being that *the sum of the angles of a (plane) triangle is less than two right angles.*

These two opposed assumptions regarding parallels, in respect to which these two geometries differ, may be regarded, now, as *contradictory, i.e.,* they can at least be *formulated* in the *negative* contrast of "one parallel" and "*not* one parallel." They are of such a character, that, if both were assumed in one system, together with other postulates, they would lead to all sorts of difficulties. No "concrete representation" of the theory to which they thus might lead is found. On the other hand, as "placed" in different universes of discourse in recognition of the empirical discovery of their mutual exclusion, each of these postulates as tò parallels leads to an *internally consistent* geometrical system, *i.e.,* one for which a concrete representation *is* found.

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[17] Cf. Chap. I.

There are other non-Euclidian systems than that of Bolyai and Lobatchewsky, as, *e.g.,* that of Riemann.[18] But the point to be emphasized regarding all of these systems is, that, *as distinct* and cosubsisting *universes of discourse, they are consistent with one another.* This they must be, since each is a system of entities or of facts that are discovered by reason. Yet, as consistent in this sense, they are also *contradictory* of one another in certain specific respects. But, also, taking the three systems together as *geometrical* systems, we have a concrete representation of *geometrical theory.* We conclude, therefore, that in the instance of these systems we have a concrete case of the identity of consistency with contradiction, and that the only contradiction that is at all damaging and that is to be avoided, is that of "taking" the different postulates regarding *parallels* into *one* system or one locus of discourse, when they should be kept distinct in three *loci.*

Each of these systems is itself internally consistent, since a concrete interpretation of each can be given that satisfies all its postulates. But further, each system is derived by discovering the implications from a relatively few propositions that are regarded as postulates, and not as axioms. These postulates, however, do not imply one another, since, if any one postulate were implied, one would not be obliged to *postulate* it, but would deduce it from the other postulates. Accordingly, in order to ascertain whether a specific proposition is to be postulated, or whether it can be deduced, one first *assumes*

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[18] Cf. Chap. I.

the formal contradictory of a certain postulate, X, and then finds that the remaining postulates together with this contradictory give a consistent system. It follows that these remaining postulates are *not* implied by X, nor X by them. Any set or group of postulates that can be successfully submitted to this test is thereby proved to be a set of propositions that are *independent* (in just this sense of *not being implied* by one another), and yet that are, also, consistent. We therefore have a specific demonstration, that implication and consistency are not only *not identical* with, but also *independent* of, each other, and that this independence "persists" even in the case of consistent propositions that do imply one another, but that can be, as distinct propositions of positive content, transformed into formal contradictories. This demonstration consists in finding that consistency is sometimes accompanied by implication, and sometimes not,—in which respect it is similar to the independence of such relational characteristics as *symmetry* and *transitivity*.[19]

We conclude, therefore, (1) that consistency may cosubsist with but is not identical with nor dependent upon implication; (2) that it means the absence of self-contradiction, but (3) that it is in some cases identical with that contradiction which is the factual *exclusion* of entities into different universes of discourse, or their factual subsistence at different loci.

Any system of philosophy presupposes consistency in these three meanings or ways.

VI. *There is a system of propositions.*

Discussion: Every philosophy makes this presupposition. With a proposition defined as a relationship between terms, whether these be simple or complex, and with all philosophical systems presupposing *that there are propositions,* it is evident that a philosophical *system* presupposes that there is a *system of propositions.*

A *system of propositions* may be defined as a set of propositions that are related either by implication, or by consistency, or also, if one will, by contradiction. Since a proposition is, however, a *relation* between *terms,* a philosophical system also presupposes, as possibly included within itself, *all the several kinds of relations* as well as all the several kinds *of terms or*

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[19] See Chap. II., p. 22.

entities that are known. Although these terms and relations are too various to enumerate completely, it will be seen that they include simple and complex terms, and those relations that generate both classes and series, *i.e.*, relations of similarity and difference, *and* of asymmetry and transitivity respectively.

A system may also be defined as an *ordered manifold* of entities. But entities are ordered by relations. It would seem, therefore, that there might be "degrees" of order, with certain "degrees" *independent* of others. Thus a system *from which all series* and whatever depends on series, as, *e.g.*, functions, should be *absent*, can be *postulated*. Such a system would, however, admit of *classes* and their relations. The Platonic philosophy is in part identical with such a system.

A system may, also, be only *partially implicative* in character, and there would also seem to be systems of contradictory (consistent) systems, each internally consistent, as illustrated by *the system of geometrical systems*. But any system of philosophy *that is open to examination and proof, and to rational defense and development, presupposes a system of propositions, some of which at least are implicative of one another,*[20] *and, therefore, more than merely consistent.*

However, that the system of propositions which constitutes a philosophy is an *organic* system, is disproved in two ways. An organic system of propositions is defined as one in which each proposition is *constituted* by its relation to all other propositions, so that no proposition can be genuinely known until all others are. Clearly such a system is modeled after a completely causal system.[21] That the system of propositions which are at our disposal is not *organic* in this sense is proved by the fact (1) that there are instances of propositions, as in the geometrical systems just discussed, that are *not implied by,* although they and their contradictories are *consistent with, other propositions;* and (2) that no relation, either of implication or consistency (or any other relation) between propositions carries with it the mutual modification or constitution of any one proposition by others, *except as this modification is deduced* from the purely gratuitous assumption (postulation) of the *modification theory of relations.* But if a system of propositions is not organic, then an entirely correct knowledge of some (one or more) propositions is possible, even though *other* implied or implying, and consistent or inconsistent propositions are not known.

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[20] See Chap. XIII.

[21] See Chap. XXVI., II., 2.

VII. *There are specific processes called knowing, and there is knowledge.*

Discussion: Every philosophical system presupposes this. *Knowledge* may be defined as that which is *common* to past, future, and present *knowing* processes. A knowing process may be defined as one in which there is *awareness,* without it being necessary that there should in turn be an awareness of this awareness. This corresponds to the distinction between consciousness and self-consciousness. There is positive evidence that *mere* consciousness and awareness is identical with *a specific relation* whose presence is conditioned by a certain *complex* in which a nervous system with a cerebral cortex is *one term,* although there may also be other radically different terms than such *neural* complexes as conditions for consciousness. The conditions for self-consciousness are more specific than are those for mere consciousness. Special kinds of awareness are those which are usually called reasoning, imagining, remembering, and perceiving, and the like, but these processes can take place without a simultaneous or subsequent consciousness of them.

As thus far defined, no distinction is made between that knowledge which is true, and that which is not. But perhaps there is no distinction, since *"true knowledge"* may be a *tautology,* and *"false knowledge"* a *misnomer.* But, be that as it may, all philosophical systems presuppose that

VIII. *There is truth.*

Discussion: Truth may be defined as the subsistence of a specific relation between the *knowing process* and the *entity known.* Were there not knowing, there would be only fact, but neither truth nor error. But, secondly, this specific relation subsists, when, in the awareness, the entity is revealed as it really is. In this state of affairs the *knowing* and the *entity known* are externally related after the *model* of the functional relationship, *i.e.,* they are in correspondence.

The objection that this is a question-begging definition of *truth* does not invalidate it, but only indicates the difficulty of finding *a test* whereby to ascertain whether knowledge in any specific instance *is* true or not. But the presence or absence of this test is not identical with the presence or absence of knowledge, for the former concerns proof and the grounds of conviction, the latter, the presence or absence of truth. Were there not this difference, *there would be no truth* unless there were a test, yet every test would be worthless unless true. The *principles of proof* must themselves, therefore, be submitted to proof and to testing. But, since with these, as with other propositions, proof in an indefinite series is impossible, the only alternative is to accept it as a fact that at some point proof is impossible, and that *truth is distinct from and independent of proof,* evidence, and testing. This is, indeed, the only ground or principle on which ultimate unproved or unprovable tests can themselves be true, but *it is also a principle that logically allows itself to be true, although it is not proved.* Indeed, were this principle not thus true, then, since the human race as yet possesses no complete proof and no absolute test for the absolute truth of any knowledge, there could be no knowledge. But, conversely, if the principle is true, then there is implied the possibility of genuine knowledge, both in the race and in the individual, *antecedent to the demonstration* that in any specific instance there is such knowledge.

This means that facts can be revealed and discovered antecedently *both* to the evidence or proof that this *is* the case, *and* also to the explanation of *how* they can be *these facts.* For example, our ancestors *perceived* and *knew* the fact that their canoes would float on the water without *understanding* either the *perceiving* or the *floating.* Likewise it is possible that one should discover that there are certain presuppositions or conditions for knowledge, and yet not understand in *all* details *how* knowledge is brought about. The experience of fact is but the antecedent occasion for subsequent explanation and proof. It is a principle, then, that

IX. *Truth is distinct from certainty.*

Discussion: Certainty is *a specific consciousness which has* some other consciousness as its object, and is, perhaps, always an instance of self-consciousness. It concerns evidence and proof and the grounds for our convictions. Thus it can be *causally grounded* in personal influences, in tradition, and in custom.[22] *Such, e.g.,* is the conviction and certainty that attends our *beliefs,* the *self-evidence* of so-called *axioms,* and, perhaps, *the inconceivability of their opposites.*[23] In contrast truth is a specific relation between knowing and that which is known. Proof and evidence are, therefore, only *methods* for attaining truth, with "successful working" in *some* cases as one such test, but with the success *conditioned by truth, and not conversely.*[24] This last proposition may be stated in the form of another principle to the effect that

X. *The nature of truth is not the same as the outcome of knowledge, i.e., of its successful and satisfactory working.*

Discussion: This "working" is *in many cases* brought about by *holding the very "idea" in question to be true,* as is illustrated by the conviction that a friend is sincere, by the belief in immortality, and the like. Accordingly it is clear that, in these circumstances, one is *not free* to hold one's judgment in suspense, thus to put an idea or theory to a test that is independent of emotion, of desire, of tradition, and of social pressure, but that in order that an idea or theory should be true in the sense of working successfully, one must *prejudge* the question, and *hold something to be true* antecedently to *"there being truth." Belief* thus generates truth, so that ultimately there is no difference between the true and the false.

But, since belief somewhere, by some one, is always to be found, it follows that there is *only truth,* and *no falsity.* But also specific *disbelief and doubt*—somewhere—by some one—are not absent in respect to any "object of belief," with the consequence that, as regards any such "object" or "idea," there is always a specific lack of "satisfactory working," so that there is *nothing that is not also false.* Thus does the position, that truth is identical with *satisfactory working,* reduce to an absurdity, and the converse position—of *science,* that truth is *not* so constituted, receive confirmation. Not only the absence of belief, but also of disbelief, or rather the *independence* of both, is the *state of affairs* that is recognized, by science, as the *condition* for the bringing about of *that kind* of satisfactory outcome and working that is acceptable to science. Such an outcome, however, is one that is brought about, *not* by the *psychological causes* of belief, desire, and tradition, but by the objective realities that are known—else were everything true, and nothing false, and, also, everything false, and nothing true. It is *because ideas are true* that they work satisfactorily where both belief and disbelief keep aloof. Yet the satisfactory outcome even here only makes us regard them as true, but does not make them true.

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[22] Cf. Chap. III.

[23] Chap. XV., IV., 4, 5, 6.

[24] Cf. Chap. XXXIII., IV.

With truth thus found to be distinct from *certainty,* and also from "successful workings," we may now present as our next principle, that

XI. *Although there is no absolute test of absolute truth, and although certainty may be lacking, nevertheless there may be true knowledge; the latter is not of necessity absent even when the two former are not present.*

Discussion: This means that true theories, true hypotheses, and the like, may often be won by guesswork,—an origin which the history of science shows to have been frequently the case.

We now reach a somewhat different group of propositions, which, while they have been discussed and developed in a number of preceding chapters, should now be stated briefly, since they are principles that all philosophical systems presuppose in one way or another, and that, therefore, form an important part of Realism and Rationalism. The first of these propositions is that

XII. *Analysis is possible.*

Discussion: This means that knowledge by analytical means is possible, but that this does not exclude immediate experience, such as feeling and intuition, from also revealing fact and giving truth.[25] The development of the technique of modern methods of knowing is identical in part with the development of methods of analysis. Analysis itself has thus been analyzed, one result of this being the discovery of methods of analysis that leave the entities thus discovered *in situ.* Such methods are most important, as we have seen, for the solution of the egocentric predicament.[26] Analysis shows a great many instances in which entities are related, *not causally, but functionally* or after the manner of the functional relationship, so that one can *only dogmatically,* but *not validly* claim that a relation *ipso facto* carries with it the *modification* and *alteration* of the related terms. In other words, *the theory of external relations is* shown empirically to hold for at least a great many instances of related terms. Therefore *the modification theory of relations* to the effect that all relations *a fortiori* carry with them a mutual causal effect of term on term, is shown *not to be universal.* It may apply to some instances of related terms, but it certainly does not to all. And for the *underlying-reality theory of relations* it has been already shown that there is only an argument, and a self-contradictory one at that, but no empirical basis.

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[25] Chap. XV., IV., 2.

[26] Chaps. XXVIII. and XXXIX.

With the fact established empirically that there are some instances of terms that are externally related, it is open to empirical investigation to disclose others. This search is rewarded by finding it to be not only a fact of direct observation, but also a *condition* of our discovering implication and of knowing "things" as they really are (which possibility is accepted by every philosophy at some point) that

XIII. *Reason is free in the sense that it is neither lawless nor yet causally determined by preceding psychical processes in the individual and the race, but that it follows whither it is led by the implicative structure of reality.*

In other words, reason, in that it is "true to itself," is determined, not by antecedent causes, but by the structure of that to which it is directed. Thus, *e.g.,* it can study the facts of development without being causally determined by its own development. It is free to ignore its own origin.

Discussion: Some of the important results that are obtained by *a reason that is free* in this sense, and that can analyze "things" *in situ,* as well as discover the implications of *experimental* analysis, may now be stated, in *summary* of previous discussions, as still further *principles.*

XIV. *By an analysis in situ knowing can always be left in relation to the entity known, and yet the two be discovered to be in an external relation. Thus the ego-centric predicament can be granted, and yet be shown to be quite harmless.*

Further *analysis* of the *"truth situation"* shows that

XV. *Although there is only One Truth, this means that there is one system of many truths, or, more precisely, of propositions* *of which some are merely consistent with, but not implicative of, one another, but that in neither case are either truths or propositions constitutive of one another.*

Discussion: Implication and consistency (if it is a relation) are as distinctly non-causal, non-constitutive, and external relations as are any other specific relations that are of this character.

But it is also shown *by analysis* that the One Truth, defined as *one system of many truths* (a truth being a known proposition), need not be an *existent* system. For there is evidence that some "things" are *unknown*—although they are *not unknowable.* It may therefore be formulated as *another principle* that

XVI. The *knowableness of entities implies that, if (true) knowledge of some or of many entities does not yet exist, there is, nevertheless, a subsistent or ideal knowledge that may "bud into existence" under certain specific conditions, and that the system of such ideal knowings is the system of Ideal Truth.*

XVII. *The subsistence of an external relation between the knowing and the entity known logically allows the latter to be both qualitatively and numerically different and distinct from the knowing.*

Discussion: This implied result is confirmed by both common sense and science. It is a result, however, that is directly opposed to those results that follow logically from the *postulation* of *the theory of internal relations* for the knowing situation. Such results are (1) that knowing modifies the object (to be) known, (2) that these two entities causally "fuse" together, so that each is *like* the other and neither is really distinct, or (3) that the *apparent* difference and distinctness are *really* illusory, and that *the* reality is a *numerically single underlying oneness.* It is to such a logical origin that certain monistic and idealistic systems are due.

In this summary there may be given as further *principles* the following propositions, though these are to be regarded as *results that are obtained by that analysis which is presupposed to be possible by any philosophical system,* and which reason is capable of making by virtue of its *freedom* to follow implications.

XVIII. *Particular existing entities are not the only objects that are open to investigation and analysis, but also classes and series, states of affairs and non-existent subsistents, and relations between all these (including the relation of implication), can be studied, and discoveries made concerning them.*

XIX. *There are two ways of knowing, namely, by "specification" and by "type."* The former is illustrated by any *particular* act of sense perception, the latter by our knowledge of *prehistoric man.*

XX. *That some and perhaps many "things" are unknown in either of these two ways is not identical with nor implicative of their being unknowable.* There are only empirical difficulties in the way of genuine knowledge, but there is *no* obstacle *inherent* in the knowing situation itself, contrary to the claim of many philosophical systems, notably of Phenomenalism.

XXI. *Error is an undeniable fact, but it can be explained, and the means for avoiding it can to a large extent be acquired by the winning of a scientific technique in both analysis and synthesis. The "taking" of one entity to be another that it is not, and the localizing of it in some time and place, one or both, or in some other universe of discourse, to which it does not belong, are the ultimate errors. But the factual status of all entities, such as physical and mental processes, dream, illusory, and normally imagined objects, and all possible objects, can be found in one consistent system, and all self-contradictions be avoided. Some entities are existent, while others are only subsistent, but all entities can be related functionally and efficiently, and not causally, to the knowing process in which they are "content."*

XXII. *Among entities various relations are found, an important case of these being the relation of logical priority, which is defined as subsisting, if* b *implies* a*, but* a *does not imply* b*. By virtue of this relation entities are "stratified" into various types.*

XXIII. *Relations are themselves not causally related, causation itself being a specific relation. Certain relations are, however, dependent on others, e.g., the converse relation,* $b\ \breve{R}\ a$*, on the original relation,* $a\ R\ b$*, but this dependence is not causal. Other relations are not even thus dependent, but are merely* to which these two geometries differ, may be regarded, now, as *contradictory, i.e.,* they can at least be *formulated* in the *negative* contrast of "one parallel" and "*not* one parallel." They are of such a character, that, if both were assumed in one system, together with other postulates, they would lead to all sorts of difficulties. No "concrete representation" of the theory to which they thus might lead is found. On the other hand, as "placed" in different universes of discourse in recognition of the empirical discovery of their mutual exclusion, each of these postulates as to parallels leads to an *internally consistent* geometrical system, *i.e.,* one for which a concrete representation *is* found.

There are other non-Euclidian systems than that of Bolyai and Lobatchewsky, as, *e.g.,* that of Riemann.[18] But the point to be emphasized regarding all of these systems is, that, *as distinct* and cosubsisting *universes of discourse, they are consistent with one another.* This they must be, since each is a system of entities or of facts that are discovered by reason. Yet, as consistent in this sense, they are also *contradictory* of one another in certain specific respects. But, also, taking the three systems together as *geometrical* systems, we have a concrete representation of *geometrical theory.* We conclude, therefore, that in the instance of these systems we have a concrete case of the identity of consistency with contradiction, and that the only contradiction that is at all damaging and that is to be avoided, is that of "taking" the different postulates regarding *parallels* into *one* system or one locus of discourse, when they should be kept distinct in three *loci.*

Each of these systems is itself internally consistent, since a concrete interpretation of each can be given that satisfies all its postulates. But further, each system is derived by discovering the implications from a relatively few propositions that are regarded as postulates, and not as axioms. These postulates, however, do not imply one another, since, if any one postulate were implied, one would not be obliged to *postulate* it, but would deduce it from the other postulates. Accordingly, in order to ascertain whether a specific proposition is to be postulated, or whether it can be deduced, one first *assumes*

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[18] Cf. Chap. I.

the formal contradictory of a certain postulate, X, and then finds that the remaining postulates together with this contradictory give a consistent system. It follows that these remaining postulates are *not* implied by X, nor X by them. Any set or group of postulates that can be successfully submitted to this test is thereby proved to be a set of propositions that are *independent* (in just this sense of *not being implied* by one another), and yet that are, also, consistent. We therefore have a specific demonstration, that implication and consistency are not only *not identical* with, but also *independent* of, each other, and that this independence "persists" even in the case of consistent propositions that do imply one another, but that can be, as distinct propositions of positive content, transformed into formal contradictories. This demonstration consists in finding that consistency is sometimes accompanied by implication, and sometimes not,—in which respect it is similar to the independence of such relational characteristics as *symmetry* and *transitivity*.[19]

We conclude, therefore, (1) that consistency may cosubsist with but is not identical with nor dependent upon implication; (2) that it means the absence of self-contradiction, but (3) that it is in some cases identical with that contradiction which is the factual *exclusion* of entities into different universes of discourse, or their factual subsistence at different loci.

Any system of philosophy presupposes consistency in these three meanings or ways.

VI. *There is a system of propositions.*

Discussion: Every philosophy makes this presupposition. With a proposition defined as a relationship between terms, whether these be simple or complex, and with all philosophical systems presupposing *that there are propositions,* it is evident that a philosophical *system* presupposes that there is a *system of propositions.*

A *system of propositions* may be defined as a set of propositions that are related either by implication, or by consistency, or also, if one will, by contradiction. Since a proposition is, however, a *relation* between *terms,* a philosophical system also presupposes, as possibly included within itself, *all the several kinds of relations* as well as all the several kinds *of terms or* are but a small part of the total realm of facts, while the study of other facts seems to be more illuminative of the study of knowing than conversely.

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[19] See Chap. II., p. 22.

It is for these reasons that in the presentation of our own scheme of constructive Realism we begin, not with the epistemological, but with the *ontological* problem, and with those solutions which Realism finds for this problem.

II. REALISM'S SOLUTION OF THE ONTOLOGICAL PROBLEM

This problem has to do, as we have seen,[2] with the question as to *what* is the ultimate nature of reality. Is it *one* both in *kind* and *number,* and, if so, *what* is this kind; or, is it *many in number* while yet *one in kind;* or is it *many both in kind and number?* The answer "yes" to the first question gives qualitative and numerical monism; to the second, qualitative monism and numerical pluralism; to the third, both qualitative and numerical pluralism. Modern transcendental Idealism, as the doctrine that everything is One Spirit or Consciousness, is an example of the first position; atomistic Materialism and Berkeleian Idealism are examples of the second; and Realism is an example of the third.

Each of these solutions, however, is an answer to a question that is directed to the *universe,* and that concerns, therefore, *all* the entities of the universe. Nothing can escape this inclusion, no matter what it may be. The problem raises the question, therefore, as to whether certain entities really are what they seem to be, and whether they may not be *reduced* either to one kind or to one entity, or to both one kind and one entity.

With the problem thus stated, it is illuminative to remind ourselves of *some* of the types of entities that are *contained* within this universe, and that, *if* there is to be a reduction, must be reduced, either to a qualitative, or to a numerical One, or to an entity that is *both* qualitatively *and* numerically *one.* For, that *everything* must be *considered and included* is made clear by the fact, that were even one entity omitted, it might prove *refractory* to that *reduction* to which all other entities may submit themselves, with the result that *monism* would be impossible, and a dualism or a pluralism of some sort would be the ontology that we would have to accept.

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[2] Cf. Chap. V.

The difficulty of the task that thus lies before the philosopher who would reduce all "things" to One, either in quality or in number, is made impressive by a survey of even a small part of the entities that must suffer such a fate—if this fate be theirs to suffer. But by this survey there becomes evident, also, the delicacy of the task of discovering the *relations* and the *systems* of entities of the universe, whether they are *"reducible"* or not. For, if they *are* reducible, the problem of their relationship as *appearances* still persists, while, if they are *not* reducible, the same problem stands in respect to their "face value."

Among the most interesting entities that must be thrown into *that total which is the universe,* and for which place must be found, is *error.*[3] For within the universe error *is;* it is a fact of some kind. Therefore, if one is a "reductionist" and a monist, and his *opponent is not,* then must either the error of the latter find its *niche* in the *monistic* Hall of Fame, or the error of the former must be distinct and different from the truth of the latter's position and find *its place* in the Rogues' Gallery of pluralism.

But there is not alone error and truth. There are also words, and judgments, and attempts to know; proofs, refutations, agreements, disagreements, convictions, beliefs, hypotheses, "things" to know, states of affairs, etc., etc. These are all *"somethings"* —although whether they are real or unreal, true or false, actual or possible, possible or impossible, may be difficult to ascertain. But at least they are *entities of some kind* that must in some manner be recognized in any attempt to reduce everything to One.

But in addition to judgments, to the attempts to know, and the like, there are also *difficulties,* and *alternative* ways of solving philosophical problems. Also, there are other human beings whom we would oppose or convince. And there are *systems,*—not one, but many,—and *postulates* and *assumptions.* Then, too, there is society, and custom and tradition, and hopes and desires, and, also, the *influences* of all these on that which some of us believe or hold to be true. This leads us to recognize that there are discoveries and inventions, works of art and mechanical constructions, "things good" and "things evil," opinions and points of view. *All of these are facts in some sense and have to be taken account of in any system of philosophy that deals with the universe.* Systems of philosophy other than our own may be mere errors or inventions, but even then they are *some kind* of fact or occurrence within the universe, so that our system is not innocent of their guilt.

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[3] Cf. Chaps. X., XLI., XX.

But just as there are many philosophical systems, so also there are science and religion and logic, *and different "positions"* within these. *All the entities* which have appeared in these developments have some sort of *status,* either of error, or of invention, or of discovery. In a monistic system *all* these must be *reduced,* while in a pluralistic system their reduction is found impossible and they all exist or subsist, although, perhaps, at different places and times, or in other different universes of discourse.

Science and logic have given us an almost inexhaustible list of entities only the most important of which can be indicated. For example, there are simple and complex, real and unreal, existent and subsistent, inorganic and organic, physical and mental entities; there are individuals, classes and series, things, events, qualities and relations; there are continuity and discontinuity, infinity, finiteness, and endlessness; numbers, space and spaces, and time; dimensions, correspondences, variables and constants; intensity, extensity, quantity, magnitude and measurement; unity and plurality, fields and domains, universes of discourse, the positive and the negative, conditions, connections and meanings. And one cannot neglect consciousness, sensations, judgments, reason, emotions, instincts, behavior, satisfaction, illusions, electrons, atoms, molecules, particles, forces, energies, directions, laws. Formidable also is the field of relations in its resistance to the effort to reduce all "things" to One, for in some sense there *are* the relations of identity, similarity and difference, inclusion, exclusion and contradiction, cause and function, dependence and independence, implication and consistency, whole and part, logical priority, symmetry and asymmetry, and transitivity and its lack.

Finally, for religion and art, there are goodness and beauty, evil and ugliness, worth and its opposite; divinity, the supernatural, creation, emanation, immanence and transcendence, heaven and hell, God and immortality, death and salvation. Be these errors or truths, inventions or discoveries, they must find their place in The One, if there be One, or must resist reduction, if there be Many.

This rather long list of entities that in some sense are facts is merely illustrative of the tremendous manifold of "things" which make up the *totality* of the universe, and which *must be reduced* in some manner, *if* Monism is to succeed.

Yet there are those that are not without hope in this task, as we have already seen, though, in the opinion of the writer, this hope is not realized. All attempts to ground a Monism in solution of the ontological problem fail, because they are all attempts which are based solely on an *argument,* from specific postulates, that becomes *self-contradictory at a certain point.*[4] And a One that is single numerically and qualitatively is *not* discovered empirically.

The realist, therefore, can accept *no one quality* or *substance,* no *one* "stuff," either mind or matter, or some unknown or unknowable underlying entity, to which all other entities are *reducible,* and which they ultimately *are,* or of which they are *manifestations.* Rather, for him, there are *kinds* that are *irreducibly different,* and there is an *irreducible plurality of these kinds.*[5]

In accepting this *pluralistic ontology* the realist and the modern rationalist do not, however, deny that the numerically distinct and qualitatively different entities of the universe are *related.* Indeed it may be that there are no two entities that are not related in one or more ways. But it is found that mere *relatedness* does not carry with it either the (causal) dependence of term on term, or the necessity of an underlying reality to mediate any relation. *Were* there such a dependence, and were it *causal,* then each related term would partake of the nature of all the others, all terms would fuse, there would be not many terms, but One, and this One would be *homogeneous* in character. Qualitative and numerical monism could thus be inferred, if it could be shown that, because all terms are related, they causally affect one another. But this is precisely what empirical evidence refutes, since, as we have previously discovered, there are undeniable instances of external and functional relations, *i.e.*, of terms related and yet independent. Also, a monistic ontology could be established provided it were an *empirical* fact of either sense or reason that an *underlying reality* mediates the relation between terms.

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[4] Chaps. XXVI., II., 3, XXXIV., XXXV., and XXXVIII.

[5] Cf. Chap. XLIV., II.

Other systems that are *monistic ontologies* in one way or another have also been found not to stand the test of criticism. Chief among these are Subjectivism, Positivism, Materialism, Psychism, and the mystical Evolutionism of some modern philosophers. All these positions collapse when put to the test of a critical method whose *principles* are *presupposed* as valid by each of the systems in question.[6]

For our acceptance, then, there remains only an *ontological pluralism, provided* that no empirical evidence, as distinct from the *artificial* character of the above mentioned systems, can be found against this. *And none can.* No all-inclusive, all-entity-constituting Being, *One* in kind *and* number, is empirically discovered; neither is an entity that is *one in kind, but many in number,* nor is an entity that is *many in kind, but one in number.* Indeed there is not even *one principle, one proposition, or one state of affairs, implying all others,* that is empirically discoverable, *i.e.,* there is no *logical monism.*[7] Implication is found to be a relation that is widespread in its subsistence, but it is not universal. For even as *terms* are related without being causally dependent, so are some *propositions* related without there being *implication* between them.

One may conclude, therefore, that, from the proposition *that the entities of the universe form a system, no more unity can be deduced* (*as present in the universe*) than that there *is a system* of individuals, classes, series, and the like, that *subsist* side by side "at" some kind of *loci, are* merely consistent with one another, and *do not imply* one another. In other words, from the *relatedness* of the entities of the universe, one can no more conclude to the universality of the implicative relation, than one can to that of the causal relation, or to the subsistence of one underlying, all-relation-mediating entity. By empirical means one cannot go beyond the specific type of relation that is found in each case. And relations that are neither implicative nor causal are found a-plenty.

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[6] See the criticism of these positions in Chaps. XXIX to XXXIII.
[7] Cf. Chaps. XXXIV.-XXXVIII.

To accept this empirical method and the *specificity* of relations thereby discovered is the procedure of Realism and of Rationalism. But it is a procedure that leads to the conclusion, that Monism of any kind can be grounded only *artificially,* and that *a Pluralism of many entities, of many kinds, in many different relations, at many different loci is the only ontology which stands the test of empirical investigation. Such an ontology* is, however, also a *Cosmology.* For a universe of entities that are related in any way is a *cosmos.* It is, then, to the task of presenting a *realistic and rationalistic cosmology* that we now devote ourselves, with an apology for the very evident insufficiency of our statement in the light of the great wealth of material that is at hand.

CHAPTER XLIII

THE REALISTIC SOLUTION OF THE COSMOLOGICAL PROBLEM[1]

I. NORMAL OBJECTS, II. ERROR, AND III. THE NATURE CONSCIOUSNESS

The solution which Realism and Rationalism give to the cosmological problem extends far beyond the answers given to the questions, Whether law and order are discovered, invented, or projected into reality? Whether everything is change and evolution, or there is *some* rest and permanence? Whether there is chance and novelty, or only absolute and complete determinism, and eternally old "things"? Realism answers these questions, but also does much more. Pluralistic in its ontology, it arrives also at a broad *cosmology* in which the solutions of *other* philosophical problems are an integral part.

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[1] Cf. Chap. VI.

There is little need to restate that Realism maintains that terms, relations, laws, principles, regularities, order, classes, and series are *discovered,* and not invented. Known entity and knowing process, whatever its further nature may be, are found empirically to be related *externally* and functionally, so that there is no empirical reason for *transforming,* as do all opposed systems, those relations and entities that are known. *System* is found to be as compatible with the lack of *universal* implication and causation as it is with them, and the subsistence of relations *not* to be identical with the dependence of related terms, nor mandatory of further transcendent and mediating entities. Realism thus takes "things" as it empirically finds them. In this empiricism Realism accepts analysis as one means of discovering fact, and finds that reason is free to follow the outline-threads of implication, whereby states of affairs as well as particular objects become known. Such an empiricism is, indeed, guaranteed by every philosophical system—even by those that attempt to insist on contrary doctrines. Relying on this guarantee, Realism proceeds to the winning of its view of the detailed nature of the *universe*—which is *that totality* of "things" in which everything must find its place.

Some of the most important entities and principles that are recognized and used by Realism in building up this detailed position are: (1) *relations* and *organization* (not the same as *organic*), especially the relations of similarity and difference, inclusion, "member of," asymmetry, transitivity, correlation, logical priority, and independence as a very special type that is distinct from causation; (2) the methods of *knowing by type* and of *analyzing in situ.* The most important general hypotheses are those in which the ubiquitous application of the concepts of *substance* and *cause* is looked at askance, and contradiction is robbed of its terrors. And important among *special problems* are those of *error* and of the *nature of consciousness.*

These *two* problems hang together most intimately, and according as one solution or another is obtained for them, one is forced to accept specific solutions of certain *other* problems. Conversely, if one solve *other* problems first, the solutions thus obtained (may) have a most important bearing on the solution of this twofold problem.

In elucidation of the statements it may be said, that, throughout the greater part of the historical development of philosophy consciousness has been regarded as a kind of *thing, substance, medium,* or *menstruum,*[2] and accordingly, that the problem of error has been solved by putting all errors entirely *into* this conscious medium, thus to make their *esse* their *percipi* or *concipi*. This is the solution which is made, *e.g.*, of the specific problem as to the status of the dreamt "falling from a roof," of the seen convergence of the parallel rails, and of the apparent bentness of the straight stick in the water. Thus, in the case of the last example, it is argued that *the stick* cannot be *both* straight *and not* straight (bent), since these are contradictories; therefore, to avoid the contradiction, the straight stick only is accepted as real, while the *locus* of the bentness is placed *in* consciousness.[3] For consciousness, *conceived of as a substance or medium, is indeed a sort of receptacle* in which all entities that are not objective can (seemingly) be placed. *Historically, therefore, it has been the concept of substance that, as applied to consciousness, has conditioned a certain specific solution of the problem of error.* And with all error-objects regarded as subjective, the next step to Subjectivism has been easy, namely, to conclude that *all objects* are in their *esse* identical with their *percipi* or with their *concipi.*[4]

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[2] Cf. Chap. III.

[3] Cf. as a typical example of this argument the articles by A. O. Lovejoy: "Reflections of a Temporalist on the New Realism," *Jour. of Phil., Psych., and Scientific Methods,* Vol. VIII., pp. 589-599; "Secondary Qualities and Subjectivity," *Jour. of Phil., Psych., and Scientific Methods,* Vol. XI., p. 214 ff.; "Relativity, Reality, and Contradiction," *Jour. of Phil., Psych., and Scientific Methods,* Vol. XI., p. 420 ff.; also see M. R. Cohen's replies to Lovejoy: "The Supposed Contradiction in the Diversity of Secondary Qualities," *Jour. of Phil., Psych., and Scientific Methods,* Vol. XI., pp. 510-512, and "Qualities, Relations, and Things," *Jour. of Phil., Psych., and Scientific Methods,* Vol. XI., pp. 617-627; cf., also, F. J. E. Woodbridge, "The Deception of the Senses," *Jour. of Phil., Psych., and Scientific Methods,* Vol. X., pp. 5-13, and A. O. Lovejoy, "Some Novelties of the New Realism," *Jour. of Phil., Psych., and Scientific Methods,* Vol. X., pp. 29-43; also the Essays by Montague and Holt in *The New Realism,* and Holt, *The Concept of Consciousness,* Chap. XIII.

[4] Cf. Chap. XXX.

On the other hand, the *independent investigation of error in recent times* has been held by some philosophers to lead to the acceptance of *such a view* as to the nature of consciousness that it must be regarded as a *substance* or *medium.* The argument of these philosophers has been, again, that contradictory characteristics cannot coexist, and that accordingly the *locus of apparent "things"* can only be *in consciousness. Or* the argument has been, that dreamt, imagined, remembered, and conceived objects *do not exist,* and therefore cannot be *efficient* in producing a consciousness of them, so that *consciousness itself must produce them.*[5]

The first of these arguments fails to convince, since it ignores *other possibilities* as to the *locus* of the *apparent* object,—*e.g.*, in the case of the bentness of the stick, the complex, *stick, water, and light.* And the second argument also fails, because it neglects certain *efficiencies,* which, though *not* causal, *are nevertheless real.*[6] If these efficiencies are considered, then, *e.g.*, dream-objects are *as real* as are existent ones, although they are not realities of the same kind as are these last.

From this it is evident that a *specific theory* as to the *nature of consciousness* leads to a *specific solution* of the *problem of error,* and, conversely, that a specific solution of the problem of *error* leads to a specific theory as to the nature of consciousness. But it also thereby becomes evident, that *another and different specific theory* as to consciousness should lead to a *different* solution of error, and conversely, another and different theory of error to a different view as to the nature of consciousness. These suppositions are confirmed by that account which Realism and Rationalism give of both consciousness and error. Consciousness is found *not* to be a *substance, energy, medium,* or *menstruum;* error *not* to be *subjective* in its *locus* and *status.*

One may start with *either* problem in order to establish these conclusions. Thus, on the one hand, one may *first* ask the question, What is *that condition* on which the genuine knowledge of objects, as *unmodified* by the very act of knowing, is possible? and then find in answer that this condition is, that knowing and object should be externally, *i.e., not causally related.*[7] But the further condition for such a non-causal relation is, that knowing and consciousness should not be of the nature of a *substance,* after the historical model of a physical thing with a substratum and inhering qualities.[8] For, if consciousness were *such an entity,* it would causally affect that to which it is related, and so alter the entity *to be known.* Therefore, if, as the very condition for there being genuine knowing, consciousness *cannot be a substance, its capacity* is lost for *holding* or containing all dreamt, illusory, remembered, imagined, and conceived objects, after the manner of qualities inhering in a *substratum, and these objects must be in some other locus.*

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[5] Lovejoy's articles, cited in note 3, are typical of this position.

[6] Cf. Chap. XLIV.

On the other hand, if one first investigates errors or error-objects in specific instances, he finds that there already is a locus for them other than a *substance-like consciousness.* For example, in the case of the bentness of the straight stick in the water, this locus is the *complex, stick, water, and light,* while in the instance of the parallel rails it is the complex, *rails and light.*[9] The substitution of a camera for a perceiving organism establishes this in both instances.

For all other cases of objects that are illusory or hallucinatory, remembered or imagined, hypothetical or abstract in general, a very similar solution can be found. The "force" that historically and traditionally is used to "drive" all such objects into a *receptacle-like consciousness,*—already modeled after the *analogy* of a physical thing—and that makes of this *a substance,* springs *either* (1) from the necessity of avoiding a specific contradiction *or* (2) from regarding *only normal physical objects* as possessing *efficiency.*

However, these two difficulties are avoided, and other possibilities are opened up by bearing in mind the true nature of contradiction. This is, as we have seen, *exclusion.*[10] *Exclusion* is a real fact in the universe. But what features of the universe are exclusive of one another is to be ascertained only by empirical investigation. *A priori,* solidity and color might be thought to exclude each other from coexisting *in the same place at the same time,* but empirically they are found to coexist. Blue and red, however, are found to exclude each other under such conditions. If entities are mutually exclusive, they must subsist in different *loci,* though it is for empirical investigation to find out what these *loci* are. They may be spatial, temporal, or logical. If entities do not have *excluding* characteristics, they may *cosubsist* at the same locus, whatever this may be. Thus the ghost that is imagined to be stalking in a room is really there, though as a *non-existing* reality. Some place in the cosmos must certainly be found *for it,* and if *this locus* is not consciousness, it can be *space,* although the ghost does not belong to the universe of discourse of *existent* objects. Once relieved from the necessity of identifying the *locus* of all such entities with consciousness, one is free to find other *loci.* And, conversely, one is freed from the hypothesis that consciousness is a substance, by this very possibility of putting error-objects into some other *locus* than consciousness.

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[7] Cf. the criticisms of opposed theories in Chaps. XXIX.-XXXVIII., also in Chaps. I., II., and III.

[8] Cf. Chap. III.

[9] Cf. Chaps. X., XI., XL., II., XLI., XX.

[10] Chap. XVI.

Analogously, by realizing that entities *other* than physical objects have *efficiency,* and that causation is not the only instance or kind of efficiency, one is relieved from concluding that, *e.g.,* objects that are remembered and yet no longer exist, *are factual only* in a receptacle-like consciousness. Within the cosmos past time is a reality in some sense, quite as much as are the future and the "specious" present, and *past* (physical) occurrences and objects are also real, though perhaps not as existing. Yet *as real* they are efficient, though not *causally* so—which they need not be. And as *efficient in a non-causal sense,* they account in part for the consciousness of them,—when the demand is made that this consciousness be accounted for. In this way one reaches the conclusion, that, *e.g.,* though the red mittens of his boyhood have long since disappeared into mere nothingness, still they need *not subsist in his consciousness* when he remembers them, but are quite as well off with *an efficient subsistence* in a time, which, though past, is nevertheless real.

This solution of the twofold problem of error and of the nature of consciousness, namely (1) that error-objects are *not subjective* (conscious) in their locus and character, and (2) that consciousness is not a substance, *may itself be obtained* either *before* other cosmological problems are solved, or *after.* In either case, however, the solutions obtained for some problems are helpful as regards others. There may be a psychological influence of one procedure on another in solving problems, but, unless the states of affairs, the entities investigated, are dependent in such a way as mutually to constitute one another, one is free both logically and psychologically to begin with almost any problem. But that there is an *independence* among states of affairs and universes of discourse, and the like, has already been shown to be a fact. We are free, therefore, to solve *other cosmological problems* in the light of our solution of the twofold problem of error and the nature of consciousness, or conversely. But our realistic cosmology must be such as to include the solution of these problems, since they concern entities that have some "place" in *that totality which is the universe.*

In deriving this detailed realistic cosmology, one should continually bear in mind the great manifold of entities both in *kind* and *number* that *are* "somewhere" in the universe. But one also should not forget that there is not more *order* in the universe than there actually is, and that the *universe* as the *totality of entities* is quite compatible with a *bare minimum* of relationships, namely, with the merely *additive* relation expressed by "and," and with the relations of *similarity* and *difference.* If the presence of only these relations means that the universe is a Chaos, and not a Cosmos, then Chaos it is. In fact, certain philosophies, notably Humanism, accept this possibility, and endeavor to make not only the three relations just mentioned, but also all others, *merely human inventions* that are "read into" the universe, but that *are not of it.* However, Humanism always neglects to inquire if *some order,* and, therefore, *some cosmology* is not already *presupposed* in the very possibility of these inventions as human institutions.[11]

The realist, however, basing his position on rationalism, finds that there are *a great many other relations* than those just mentioned, and that *all relations are objective* to the knowing consciousness, and not resident in it.[12]

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[11] Chap. XXXIII., v. and vi.

[12] Cf. Chap. II.

IV. COMPLEX ENTITIES; V. CREATIVE SYNTHESIS; VI. FREEDOM

The physical universe is accepted by Realism essentially as it is portrayed by the physical sciences, notably astronomy, physics, chemistry and physical chemistry, physiology, and biology. "Fundamental" realities other than those which, such as electrons, are discovered by these sciences, are not accepted, *i.e.*, the physical universe is *not* regarded as *transformable* into, *e.g.*, One Underlying Spirit, of which all else is manifestation.[13]

Yet Realism criticizes these sciences, or, rather, the scientist who pursues them, when he becomes short-sighted and dogmatic, and *identifies the story* which these sciences tell *with the whole story* that is to be told. Such *dogmatism* leads to Naturalism.[14] There is much else in the universe besides those entities that are studied by the natural sciences.[15]

Further, Realism does not consider or regard the physical sciences to be either entirely correct, or complete. The scientist makes errors, taking that to be existent which may not be, and making only approximations in most, if not in all cases. But there is nothing inherent in this situation either to prevent errors from being eradicated, and from having their own nature revealed, or to preclude existent entities from being discovered, and ever closer approximations made. Also, many entities and many kinds of entities may be still unknown, but there is nothing in the knowing situation to make them essentially *unknowable*.[16]

Contradictions exist or subsist in the realm of the physical sciences in the sense in which contradiction has been defined,[17] but there are no *self*-contradictions, and no contradictions that cannot be resolved. For example, there are contradictory theories, of course; but this situation can be solved by showing that the entities denoted by one theory are not in the same locus or universe of discourse as are those denoted by another,[18] and, therefore, cosubsist. Thus the entities of one theory may be *existents*, those of another, *non-existent subsistents*, such as, *e.g.*, is the "hypothetical" *perpetual motion machine* of mechanics. For such a machine is *a rationally consistent reality.* Likewise *each* instance of a seemingly damaging and always formally expressible contradiction in the realm of existent physical entities, as, *e.g.*, the parallel rails *and* their *apparent convergence* (non-parallel), this red *and* that blue *and* that solidity (both *not-red*), can always be solved by finding a different spatial *locus,* if the entities exclude one another, or a common *locus,* if it is a fact that they coexist.

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[13] Cf. Chaps. XXXIV.-XXXVIII.

[14] Chaps. XXXII., I., II., and III.

[15] Cf., *e.g.*, Chaps. II., XXI., XXII., XXV., XXVII., XLV.

[16] Chap. XLI., XX.

[17] Chap. XVI.

[18] Cf. Chap. XVI.

Within this physical universe one finds innumerable instances of such relations as *cause and effect, function, independence, logical priority,* and *whole and part,* whereby there is *organization*—though in every instance of a specific kind. Accordingly one finds different types of wholes, of parts, of unities, and of individuals.[19] Some of these types are not usually noticed by the natural scientist, and may, therefore, be advantageously brought to attention in the presentation of a *realistic cosmology.*

The physical sciences, together with common sense, accept the existence of *individual things,* such as tables and books, batteries and bombs, gas fumes and smoke, though there may not be agreement as to the definition of a *thing,* and, therefore, difficulty in some cases in determining whether "something" is a *thing* or not—as, *e.g.*, a current of electricity. But within that realm in which there is agreement as to what entities *are things,* it is recognized that *things move* and also undergo a *change* in quality, and therefore that also there are *relations* of *causation,* and of similarity and difference. But as both similar and different, things form *classes* in respect to specific qualities and characteristics.[20] Thus, *e.g.*, there are some beings that reproduce their kind, are sensitive and respond to stimuli, and some that do *not;* and in turn among these beings there are those that have a nervous system consisting of a brain and spinal cord, and those that have not. But also, as somewhat different from these classificatory characters, there are the electrical, magnetic, thermic, osmotic, chemical, and other forces that are present in individual physical things, or of which a particular physical thing is a complex, and in respect to these characteristics there are also *classes.* The *class* in each such instance is composed of *individuals;* yet in the midst of the individuality there is a specific similarity, which is *the fact* of *one state of affairs* for all individuals. This fact, however, is *not* identical with *any one individual* of the class, nor with *the whole group of individuals* that make up the class. It is, rather, "over and above" both individual and group, and may be called the "objective concept," the knowledge of which is the subjective concept. States of affairs of this kind hold of the individuals of all *classes,* being, in respect to the individuals of which they hold, *inclusive* of some, and *exclusive* of other individuals, while they may also, as *specific states of affairs,* themselves be members of other classes. Generic facts of this kind are tacitly recognized, though they are not explicitly formulated by the physical sciences.

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[19] Chap. XXVII.

[20] Cf. Chap. XIII.

More interesting, however, than these—to the logician—very trite matters are certain other facts that also are not usually recognized by the scientist. Certain *individual* objects, *e.g.,* those individuals that go by such names as *protozoa, porifera,* and *coelenterates,* are groups of certain specific *biological attributes* that are *organized* by one or more relations, and that coexist in the same place at the same time. But in addition to the biological properties of these individuals, there are *other* parts, *and* the *attributes of these parts.* Thus, *e.g.,* some of the *parts* of an *amœba are* (1) molecules in colloidal solution, (2) atoms, and, if modern physics is correct, (3) electrons. Yet each of these is also *a whole* as well as a part; in one relation it is the former, in another, the latter.

In a similar manner *any organism* is itself *many "things"* at the same time. It is both *one* and *many;* also, both *organism* and *physical object.* As an *organism* it is *one* and is related to other organisms in many ways, while as a physical and chemical object it is subject to gravitation, to thermic and electric forces, and is a *complex,* perhaps, indeed, finally an *organized* group of a tremendous number of electrons. The fact that it is *organized* does not, however, make it *organic,* for many organized entities are not organic. Thus, atoms are organized into a molecule, but the latter is not organic. The *organic* character of the organism is identical, rather, with those *specific attributes* which appear as a result of *its specific organization.*

An organism is *each one* of *all* these "things" and attributes *by virtue of being an organized whole, or a relational complex.* But it *could be* a moving body and a chemical complex *without* being a living being. Therefore some of the "things" or qualities which an organism *is* by virtue of the *organization* of certain parts, such as colloidal particles, molecules, and atoms, *are not necessitated,* implied, or caused by, though they are compatible with, *such parts.*

The situation just described as holding for any organism is one that is found to be repeated for all *complex and organized* individuals, living and non-living, plant and animal, in the physical world, *additive* wholes alone being the exception. Indeed it is a situation that is also found in the mental realm, and in that field which is neither physical nor mental, yet factual, namely, the field of subsistents. Certain further and important aspects of this situation should now be mentioned.

In the physical world (and elsewhere) it is an established empirical fact, that parts as *non-additively* organized form *a whole* which has characterictics that are *qualitatively different* from the characteristics of the parts. A simple and familiar illustration of this is the formation of water out of hydrogen and oxygen. The relation between hydrogen and oxygen is *not* additive, but organizing, and the characteristics of the water are not the same as are those of its chemical components. Also, the appearance of these *new* characteristics (of the whole) is not nullified by the hypothesis that they are *potential* in the parts in any sense; for, even if it be granted that this hypothesis does anything more than *conceal our ignorance,* it but repeats the problem in the form of the question as to *how the existential* appears out of *the qualitatively different potential. On the other hand, if the hypothesis, that there are non-additive relations, is accepted as an empirically established principle from which deductions concerning specific instances can be made, then one can understand in just this sense the specific de novo appearance of certain qualities.* "Things" *added* give merely *a total* of the same qualities as the parts have. For example, one atom of carbon *plus* another, *plus* a third, are three times one atom in respect to all qualities that one atom has. But three atoms of any kind *organized* chemically, *i.e.,* related *non-additively, are a molecule,* even as H H O organized *are* water, and the *resulting whole* has characteristics different from those of the parts.

This process of the formation of *new* qualities through the organization of parts into wholes may be called *creative synthesis.* Just as in the case of classes, in which individuals are organized by the relation of similarity, *the state of affairs of a specific similarity is itself unitary* and not many, and is *distinct* both from each individual of the class, and from the class as a whole, so in other organized wholes a similar situation is found.[21] *Certain specific relations,* recognized, named, and *technically formulated in special sciences, organize* parts into wholes, and there are states of affairs resulting that are identical with new properties, and that are different and distinct from the individual parts and their properties. Therefore the *reduction* of these new properties to those of the parts *in the sense of identification,* and the finding of a *causal determination* also in this same sense is *impossible.* The properties of the whole are, at least some of them, new, and in just this respect *are a "law unto themselves" and in this sense free.* This does not mean that they are lawless, but only that their specific principles of "behavior" are not identical with those of the parts.

Such a situation, however, presents certain interesting and important instances of *principles* that have been emphasized throughout this volume. An individual, defined as the subsistence and perhaps coexistence of several qualities, attributes, or characteristics in the same locus, is many "things" at once, which, however, are not all *causal* derivatives of one another. Thus, *e.g.,* an organism is a biological individual, with specific characteristics that follow biological laws; but it is also a physical complex of forces that follows the laws of physics, and a chemical complex of entities that follows the laws of chemistry. *For each biological quality and its changes there are corresponding purely physical and chemical qualities and changes, but this relation of correspondence is not causal.* Rather, it is *functional.* The physical and chemical changes could take place without there being a biological individual. Therefore, it is their organization by specific organizing relations that "gives" the organism *and* the qualities that are peculiar to it.[22] And the situation is quite the same as regards *inorganic* physical bodies and their chemical constituents. *In both cases constituent parts may come and go, but the organization remains; the latter is more permanent than the residence in it of the "material" parts.*

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[21] Cf. Chap. XXVII.

[22] Cf. Baldwin, *Development and Evolution.*

At or within each level of phenomena that thus results from the organization of parts into a whole *causal* relations exist, and individuals are found to *resemble* one another in respect to these relations. Accordingly *empirical causal laws* are discoverable. Thus, *e.g.*, the entrance of the nucleus of the spermatozoon into the ovum is said to *cause* cell division. But this empirical fact, at this level, is neither supplanted by, nor incompatible with, nor deducible from, the further facts, that both spermatozoon and ovum *are physical bodies and complexes of chemical compounds, and follow physical and chemical laws.*

From facts of this kind there is derivable an interesting *definition of freedom* that may best be indicated by first employing it, to the effect, that *at each level or stratum of reality formed by the non-additive organization of parts into a whole, qualities or phenomena are free to act in accordance with their own nature and their own causal connections with other qualities of this level, for the absence of these qualities at other and "lower" levels is the absence of the occasion either for determination (or its lack) in respect to these qualities.* No higher level *violates* the laws of those lower levels which, in individual instance, are *organized* in the higher level as its constituent parts; but also no *lower* level *causally* determines any *higher* level. Accordingly there is the interesting and, for the solution of many a moot question in both philosophy and science, *important principle,* that as between *any two levels* there is (1) no occasion for *conflict,* but only opportunity for *compatibility;* yet (2) *no possibility of derivation and deduction* of higher levels from lower, and therefore (3) *no complete identity* of higher levels with lower, so that (4) all levels that are *higher* in relation to others as lower are *primarily discoverable and ascertainable only by inductive and empirical investigation,* although (5) once discovered, the compatibility and *correlation of higher levels with lower* is also determinable, so that (6) subsequently *computations in terms of lower levels* may be made as the means of control and prediction of higher levels, even as this is done, as a matter of fact, in the instance of every correlation of independent (lower) and dependent variable (higher level). This principle is illustrated by the fact that in all those instances in which, by means of the most exact and precise analysis and measurement, a *correlation of all higher levels with* that level which is lowest and most fundamental has been established, namely, with the *number series,* this series is used as a means of computation and prediction and the like. But this fact does not mean, certainly, the complete identity of all higher levels with *number.*

Freedom consists, therefore, of action in accordance with those characteristics which subsist at a certain level of organization, but do not exist at other (lower) levels, yet is quite compatible with law and determination both at this higher level and at lower levels. Freedom of this kind subsists *at each level* of reality in the universe, not only in the mental, but also all through the physical and the merely subsistent realms.

An example of this phase of realistic and rationalistic cosmology will help both to make our discussion clear, and to present considerations of very practical bearing.

A human being is, like other living beings, at one and the same time a biological individual, a complex of chemical compounds, and a physical object. Even that which distinguishes him as human from other living beings is his *peculiar* biological, physical, and chemical organization. But a human being is also an ethical and a reasoning being. However, neither his ethical nor his rational nature conflicts with his biological, his physical, or his chemical characteristics, since, by virtue of the *former* he is something more than—he is over and above—the *latter.* The particular ethical and rational characteristics presuppose the particular biological, physical, and chemical characteristics embodied in any one human individual, but they cannot be derived from or identified with these latter, though, once discovered, they can in some way be *correlated* with them. But from this there follows the conclusion—*of the gravest importance for the world in the present world-conflict of standards*—that *ethics is not a branch of biology,* even as biology is not a branch of chemistry and physics, and also that *conscience, will, and reason, although not undetermined and lawless, are nevertheless free—first, however, in the very specific sense of being realities in a realm from which causation is absent, but in which the ideals of right and justice and truth are present as efficiencies, thus to lead men to act as they ought to act, and to reason as the implicative structure of reality dictates, and not as tradition and custom and authority would have them reason.*

VII. AND VIII. SPACE AND TIME AS PART OF THE COSMOS
INFINITY AND CONTINUITY [23]

The cosmological principles thus far discovered are further exemplified by such entities as space and time in contrast with their constituent parts, and by the relation of the physical world to these two entities.

It is a commonplace, of course, to remark, that the physical world is spatial (and temporal), but *just what* this means, as a proposition, is anything but a matter of common knowledge. Accordingly a determination of the more exact and precise meaning of this statement will be attempted, as an essential part of our outline of *realistic cosmology.*

Several meanings to the statement that the physical world is spatial are distinguishable, as, *e.g.*, that physical objects (1) are spatially extended, or, (2) *as extended,* exist in space, or (3) have the same characteristics as space, or (4) *presuppose* space. The latter meaning is, however, most important, since the former three either reduce to, or depend upon *this specific relation of presupposition.* Therefore, with the characteristics of this relation determined, the former meanings can be made clear, *provided* the nature of space itself is first explained.

Physical objects *presuppose* space in the sense, that *they could not exist* were space not a reality, but that space would be a reality *without them.* Briefly, space is *logically prior* to physical objects. Physical objects *depend on* space, but are *not caused* by space; they do *not constitute* space, and space does not depend on them, yet space constitutes them in part, and conditions them, though not causally.

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[23] Cf. this presentation with Chaps. I., XXI., XXII., XXIII., XXIV., and XXVII.

Space, like time, is an *organized whole* or *relational complex,* that consists of several kinds of parts, and that has various characteristics. It consists of dimensions, such as lines, planes, and volumes, in specific relations to one another, and also of points. Also, any finite space consists of smaller spaces; *i.e.*, lines, as *finite,* consist of smaller lines, planes, of smaller planes, and volumes, of smaller volumes. These several kinds of parts, as *organized* in specific instances by *certain specific relations,* form *wholes;* for space is *not the merely additive result* of its parts, but is a *non-additive* whole. Indeed, this is the secret of the fact (1) that points, defined as the *unextended elements* of space, form *extension* of one dimension, as it is also of the facts, (2) that lines form a plane, and (3) planes, a three-dimensional manifold or volume. In space, then, there are embodied specific *organizing relations.* These relations are *asymmetrical* and *transitive,* and are similar to the relations of "ancestor of" and "greater than." Thus, *e.g.*, since the relation "ancestor of" is not identical with its inverse, "descendant of," it is asymmetrical, and also, since if *A* is ancestor of *B* and *B* is ancestor of *C, A is ancestor of C,* it is transitive.

But *extension as a whole, e.g.*, any specific extension, is distinct from both the parts and their relations. Thus a finite line consists of both smaller lines *and* points; a plane, of both smaller planes and lines; and a volume, of smaller volumes, planes, *and* points. But while the parts (of each kind) *and* the relations are *individuals,* and therefore *many,* and each belongs to a specific type, *the whole* that results from the organization of the parts is *one,* although it has, or, more precisely, *is* properties that are *different* both from the organizing relations and from *certain kinds of parts,* if not from others. For example, a finite line and the smaller lines that are its parts are of *one type,* for both are *extensions;* but the other type of parts, namely, the points, lack this specific characteristic.

In respect to each of the several different kinds of parts, *the whole* that "results" from their *organization* may have different and distinct characteristics. Thus, *e.g.*, in respect to *smaller finite lines* as parts, a line is *finite,* or, if the parts are *very small relatively* (*as units of measurement*). *endless* (which means, *not without end*, but only *not yet ended* or measured); yet, *in respect to points* the line is also *infinite*. But since the line is made up *both* of smaller lines and of larger ones, and also of points, it is "at one and the same time "*endless, finite, and infinite*. These are quite *consistent* characteristics, since they concern different phases or aspects of the line, and belong in different universes of discourse. The line itself, however, is that unitary entity which is the organization of these "phases," and of the parts which "condition" them.

The *infinity* of, *e.g.*, a *line* consists in the fact that there are *as many points* in any *finite* part as there are in the *whole*. *How many* points, one cannot say, *i.e.*, one cannot count them, or designate them by any finite number, but one can say "as many," if not "how many." This definition of infinity is, evidently, in terms of *the relation of one-one correspondence* between the *points* of *the whole line* and those of any of its *proper parts* (smaller lines). It is a definition whose "principle," however, allows us also to define a *cardinal* number as the "class of all classes that are in one-one correspondence." Thus, *e.g.*, in the case of the soldiers of the regiment to whom guns are assigned, one gun *per* man, two classes, men and guns, *agree in one characteristic*, namely, their cardinal number, *N*, so that this is *a class of those two classes*.[24]

This definition of cardinal number clearly makes *no distinction* between finite and infinite numbers. However, such a distinction is made by the definition, that an infinite number is that class of two classes *one of which is a proper part of the other*, as, *e.g.*, the *even integers* (as well as the odd) are a proper part of the series of *both odd and even integers*. It then follows that a *finite number* is one that is not infinite. That specific state of affairs which *is infinity* does not hold, therefore, of a line in reference to the smaller lines that are its constituents, for clearly, in reference to these, there are more constituents in the whole than in any proper part. But, in reference to *points*, there *is* a one-one correspondence between whole and proper part. It must be, therefore, that *points have*

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[24] This is Mr. Russell's definition of cardinal number, which seems to be accepted by the majority of mathematicians, if not by all.

no size, no extension, and that they themselves, as individuals, are neither infinite, finite, nor endless. We may conclude, then, that *these* last characteristics result from the *organization* of points, and belong to the line as a whole, but not to the points or to the organizing relations.

If, now, *instants, lines,* and *planes* are organized by asymmetrical transitive relations, we have, respectively, time, planes, and volumes, as the resulting wholes. Yet of each of these different types of whole, essentially the same propositions hold that have just been stated as holding for lines. Thus, *e.g., time* (all time) is a one dimensional series of instants, related asymmetrically and transitively, and without beginning and end; *past time,* however, ends with the present, as future time begins with it, yet each is infinite. Any finite period of time, with two ends, instead of one, is also infinite—in respect to instants; but it is finite in respect to smaller times, as opposed to instants, although it is also endless if these smaller times are so small that their enumeration is *not* ended. In a similar way a plane is infinite in respect to lines, yet also both finite and endless in respect to smaller planes; a volume, infinite in respect to both planes and lines (and points), but finite and endless in respect to smaller volumes.

But there are other characteristics of these wholes that must also be briefly considered in order that our presentation may be complete in certain essentials. These characteristics concern *continuity, discontinuity,* and "*density.*"[25] First, it may be remarked, that owing to the relative grossness of even the most refined experimental methods, it is impossible to ascertain whether the space and time of our perception are strictly continuous or only dense, if they are not, indeed, discontinuous. The reason for this inability of experimentation is, that the limits of those errors that are unavoidably incurred in measurement *are such* as to *include* the differences between *continuous* and *dense,* and perhaps, also, between *continuous* and *discontinuous* space and time.

The differences between these *three* characteristics or entities, *whichever one* space, time, and, also, motion and change in general may be, have been technically determined, with very great precision and exactness, during the last fifty years, chiefly, however, through the investigation of *number.*[26]

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[25] Cf. Chaps. II., XXII., XXIII., XXIV., XXV.

IX. NUMBER

In the results thus obtained a *cardinal number* is defined as *the number, N,* of any two groups of objects, no matter what their character, that are in one-one correspondence with each other. A cardinal number is, therefore, the *very minimum of resemblance* between two specific groups in respect to their *manifoldness. The group of positive integers, or of natural numbers, is the group of cardinal numbers, N's,* that are thus discovered. These integers in their *natural order, i.e., the order of magnitude,* are a *series.*

This series may be defined as determined, generated, or organized by a relation, *R,* "less than," symbolized by $<$, that is (1) "connected," (2) "irreflexive," (3) "transitive for distinct elements," and (4) "asymmetrical for distinct elements,"[27] the two last properties being, perhaps, the most important ones to which to give our attention. In so far as the relation $<$ has these four properties, it satisfies respectively three *postulates* and one *theorem*, namely,

"*Postulate 1. If a and b are distinct elements of the class, K, then either $a < b$, or $b < a$.*"

"*Postulate 2. If $a < b$, then a and b are distinct.*"

"*Postulate 3. If $a < b$ and $b < c$, then $a < c$.*"

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[26] The presentation that follows is one the essential features of which may be found in a number of recent treatises on the subject. The best presentation known to the writer is E. W. Hobson's *Theory of Functions of a Real Variable,* 1907; other systematic presentations are those of Whitehead, *Introduction to Mathematics;* J. W. Young, *Fundamental Concepts of Algebra and Geometry,* especially Chaps. VI.-XI; W. H. and G. C. Young, *Theory of Sets of Points,* 1906; G. H. Hardy, *Pure Mathematics,* 1908, especially Chap. I.; E. Cassirer, *Substanzbegriff und Funktionsbegriff,* Chap. II. on Number and Chap. III. on Geometry.

Cf., also, as some of the more important contributions in the development of the modern theory of number, etc.: Bolzano, *Paradoxien des Unendlichen,* 1851; R. Dedekind, *Stetigkeit und irrat. Zahlen,* 1872, and *Was sind und was sollen die Zahlen,* trans. by Beman as, *Essays on Number* 1901; G. Cantor, *Grundlagen einer algem. Mannigfaltigkeitslehre,* 1883; G. Frege, *Die Grundlagen d. Arithmetik,* 1884; Russell, *Principles of Mathematics,* and *Scientific Method in Philosophy* in various places; Royce, *The Principles of Logic, loc. cit.;* and E. V. Huntington, "The Continuum as a Type of Order," *Annals of Math.,* Vols. VI. and VII., 1905, and *The Continuum,* 1917.

[27] E. V. Huntington, *The Continuum,* 1917, p. 11, note.

"Theorem I. If $a < b$ is true, then $b < a$ is false."[28]

These postulates can be demonstrated to be consistent and yet independent.[29]

A slight critical inspection of the class of *all* the natural numbers, 1, 2, 3, 4 . . . $n - 1$, n, $n + 1$ (or the first n of them), in their natural order, reveals the fact that this class is a series in that it satisfies these three postulates *and* Theorem I., and is generated by a relation which has the properties 1 — 4.

The negative numbers and 0 may be dismissed with the statement, that they are *implied* by the possibility of a certain operation, substraction, such that, if a and b are any two natural numbers, *$a - b$ is a number.* Evidently, if $a < b$, then $b - a$ is a positive integer, as, *e.g.*, $3 - 2 = 1$; but likewise, for the operation, $a - b$, if $a < b$, there must be *negative numbers,* as, *e.g.,* $5 - 7 = -2$, and, in the special case of $a = b$, $a - b = 0$. In this *series of negative and of positive integers* and zero, the asymmetrical and transitive relations above mentioned relate any three distinct numbers.

But there *are* not only natural numbers, such as we have just examined, but there are also fractions. Fractions, however, are of two kinds, *rational* and *irrational.* Rational fractions may be defined in a number of ways, one definition being that they are those numbers which are implied by a certain operation, namely, *division,* provided this is *not the same as repeated subtraction, or identical with an integer.* Division is defined by the operation $\frac{a}{b}$ which is *such that,* if $\frac{a}{b}$ be "taken" b times, $\frac{a}{b}\, b = a$. If, in a concrete case, this is, *e.g.*, $\frac{20}{7}$, one can say the result is the same as "taking 7 away twice," and finding 6 as a remainder, and, in another concrete case, if we have $\frac{10}{5}$, this $= 2$. A *rational fraction* may, therefore, be defined as such a number as is implied by a division that is *not reducible* to either of the two cases thus exemplified. As examples that fulfil these conditions we may cite 1/2, 1/3, 1/4, 1/5.

As characteristic of these fractions it is found, that, if $\frac{a}{b}$

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[28] *Ibid.*, p. 10.

[29] *Ibid.*, Chap. II.

and $\frac{c}{d}$ be any two such numbers, *there is always a fraction* $\frac{a\,d + b\,c}{2\,b\,d}$ *between* them. Thus, *e.g.*, between 1/4 and 1/2 there is the fraction 3/8, between 1/4 and 3/8 there is the fraction 5/16, and between 1/4 and 5/16 the fraction 9/32, and so on to infinity; *i.e.*, between any two rational fractions there is an infinity of rational fractions.

This characteristic may be used *in* a second definition of rational fractions, though not as an exclusive definition, since irrationals also have the same property. But it is a characteristic that distinguishes rational fractions (as well as irrationals) from integers. Rational fractions are numbers such that (1) between any two there is a third and therefore an infinity of other similar "elements," so that (2) no rational fraction is *next* to any other rational fraction, *i.e.*, no rational fraction has an *immediate* successor or an *immediate* predecessor. In contrast with these two characteristics of rational fractions, the integers, both positive, negative, *and* zero, in their natural order are such that the members of some pairs of integers have *no* integer between them, and are, therefore, *next* to each other. This is the fact, *e.g.*, with the pairs (7, 8), (—4, —3), etc.

However, integers and rational fractions are similar in respect to the characteristic, that the difference between any two elements of either class is *finite*, although this difference may in some instances be *very small*. This is quite evident in the case of the integers, where the difference between any two integers is always another integer that occupies some place in the series of integers. Thus, *e.g.*, $9 - 4 = 5$; $3 - 7 = -4$. But the same principle holds also of the rational fractions, since the difference between any two such fractions, $\frac{a}{b}$ and $\frac{c}{d}$, is itself a fraction, $\frac{d\,a - c\,b}{b\,d}$, *e.g.*, $\frac{1}{2} - \frac{1}{5} = \frac{3}{10}$, and is *finite*. One important bearing of this principle is, that if any series, *e.g.*, that series of velocities which *is* accelerated motion, were ordered like the series of rational fractions in order of magnitude, there would be "sudden jumps,"—*i.e.* (in the instance of accelerated motion), jumps from one specific finite velocity to another, in which case *continuous* change of velocity would be impossible.

It is evident, therefore, that, if there are series and processes which are genuinely *continuous,* they must present a *type of order that is different from and something more than* that type which is presented by the integers *and* rational fractions in order of magnitude.

Such a type is found by developing the implications of certain characteristics of the rational numbers, namely, the integers *and* rational fractions. Such a method leads to the discovery of *still another type of number,* namely, the *irrationals,* and it is through these numbers, together with the rationals, that the precise nature of continuity is established, or that *the continuum* is generated. On the basis of the principles that that which is (found to be) implied must be admitted to be a fact, *irrationals* are to be accepted as facts—though of a specific kind—as much as is anything else which is disclosed either by reasoning or by sensation.

That characteristic of rational numbers which, through the development of its implications, most particularly leads to the discovery of irrationals is called a "cut." A "cut" may be defined as a separation of an *ordered* class into two sub-classes, A_1 and A_2, *such that* every element, a_1, of one class, A_1, precedes every element a_2 of the other class A_2.

In the case of the series of all integers (positive, negative, and zero) this cut is identical with each and every integer; for each integer a separates the series into two sub-classes, A_1 and A_2, one of which, A_1, is *less* than a, and the other, A_2, *greater* than a. But whatever integer a may be, *e.g.,* 5, then those integers that are less than a include a *last number,* and those that are greater include a *first,* 4 and 6 *respectively* in the example chosen; also, the number a may be assigned either to *those numbers which are less, or to those which are greater,* so that, in the former case, every number of class A_1 *and also* a *itself* $< A_2$, while, in the latter case, every element of $A_1 < a$ *and also every element of* A_2. In both cases, A_1 has a *last,* and A_2 a *first* number, and they are *next* to each other.

However, this state of affairs is *not* found for the rational fractions, as may be made clear by taking an example. Let us suppose an element, a, say, 1/3, and let this be *the last* of the elements of the class A_1 *all* of whose elements (numbers) $<$ *all* those of A_2. Then A_1 has a last, but A_2 has *no first* element, in distinction from the case with the integers. For *between* any fraction, a_2 (of A_2), and 1/3, there is another fraction, $\frac{1+3a_2}{2(3)}$, and so on, so that 1/3 is *not next to any fraction that is greater.*

The interesting question next arises, whether there are also numbers or "cuts" (A_1 A_2) of such a character that not only A_2 has *no first* (as *with* the rational fractions), but also that A_1, which precedes, has (in *distinction* from the rational fractions) *no last* element. In other words, is there such a "cut" or number, A_1 A_2, that, to state it somewhat paradoxically, *all those numbers that are less* (than all those that are greater) *have no last,* and *all those that are greater* (than all those that are less) *have no first element?*

Investigation shows that this question must be answered with "yes." Again to take an example, there is a number, *a,* let us say ($\sqrt{2}$), such that, if we evaluate it, using *rational fractions* (decimals) therefor, and *approximating* nearer and nearer, yet getting now a fraction that is *too large,* and now *one that is too small to equal 2 when "squared,"* this number *a* separates the whole class of such (decimal) fractions into *two sub-classes* which have the characteristic that, while *all* the elements of the one, A_1, are smaller than all the elements of the other, A_2, nevertheless in the one, A_1, there is *no "largest" and last element,* and in the other, A_2, *no "smallest" or first element.* Thus, in our example, in the first sub-class, A_1, there is an infinite series of fractions that are all *greater than* any *mentionable* one, such as 1.4142, but that are still *all less* than any one of the infinite series of fractions of the second class, A_2, all of which are greater than any element of A_1; yet in this sub-class, A_2, there is likewise an infinite series of fractions that are *smaller than* any mentionable one, such as 1.4143. The number *a, i.e.,* the actual number so inadequately symbolized in our example by $\sqrt{2}$, and impossible of naming or stating by any decimal, *is not a member either of A_1 or of A_2, and in this respect differs from any rational fraction,* such as 1/3, which *is either* a member, namely, *the last,* of that series, A_1, *all* of whose elements are *less than all the* *elements* of A_2 that have *no first,* or, is *the first* of that series, A_2, all of whose elements are greater than all those elements of A_1 that have no last element.

Another and less technical way of stating the same thing is,—to continue the example—that *a, as the square root of 2* ($\sqrt{2}$), is *not* a member of either the series of *rational fractions* that are smaller or of those that are greater than *a,* but is the *limit* that is approached by both the smaller rational fractions, A_1, as they "become" *larger* and *larger,* and by the larger fractions, A_2, as they "become" *smaller* and *smaller.* Between these two series *a* is "squeezed" in, and to it, as a limit, one can "come" as near as one pleases, without ever reaching it; also between it and any rational fraction "on either side," *the difference is not finite,* in contrast with those differences that subsist between all rational numbers. In this contrast there lies, perhaps, the secret of the "ability" of the *irrationals* to generate the *continuum,* in the strictest modern sense of this term. And also in the fact that an irrational is not a member of either of the two sub-classes or sub-series that approach it, we may discover the important principle *that a limit is not a member of the series of which it is a limit.* Such a principle has an important bearing on the *status of ideals* in questions that concern the logical possibility of any genuine *progress* and advance in, *e.g.,* the ethical condition of mankind.

In summary, then, we may assert that modern analysis discloses several different types of numbers, important characteristics of some of which have just been presented, and that those types which chiefly concern us, in our discussion of cosmology, are positive and negative numbers, and zero, and integers, rational fractions (both rational) and irrationals. There are further technical differences between these several types that need not, however, for our purposes, be considered or presented. Such differences concern, *e.g.,* such definitions as that *integers are those numbers which are natural; rational numbers, those which are pairs of integers; and real numbers, those which are classes or fundamental segments of rationals.*

As sufficiently accurate for our purposes, therefore, we may accept the distinctions above stated, and then point out, that, if we "take" a certain specific series that is constituted by (1) *integers*, say, -1, 0, and $+1$, (2) *rational fractions*, namely, the infinity of such fractions between -1 and 0, and 0 and $+1$ respectively, and (3) the *irrationals* between these two *end-points*, with (4) *all elements* of these three types in order of *precedence* or of magnitude, we then have a *series* that (5) is a linear continuum in the most precise modern sense of this term, and that also (6) is sometimes called a class of *real numbers*.

This *series* satisfies the three postulates, 1—3, and also Theorem I., previously stated, and is generated by a relation that is "connected," "irreflexive," asymmetrical, and transitive; *but it* (this series) *also satisfies* a principle which has just been disclosed in our discussion of "cuts," and which may now be formulated as Postulate 4 (Dedekind's), and, finally, satisfies two other postulates, namely, those of (5) *density* (illustrated by the rational fractions) and (6) *linearity*.

Postulate 4. If A_1 and A_2 are any two non-empty sub-classes of A, such that every element of A belongs either to A_1 or to A_2, and every element of A_1 precedes every element of A_2, then there is at least one element a in A such that:

(1) *Any element that precedes a belongs to A_1 and*

(2) *Any element that follows a belongs to A_2.*[30]

Postulate 5 (*postulate of density*). *If a and b are elements of the class A, and $a < b$, then there is at least one element x in A such that $a < x$ and $x < b$.*[31]

Postulate 6 (*postulate of linearity*). *The class A contains a denumerable sub-class R in such a way that between any two elements of the given class A there is an element of R.*[32]

In explanation of the terms here used it may be further said that a class is *denumerable* if it is such that its elements can be put into one-one correspondence with the elements of a *progression*, the simplest example of which is the series of natural numbers in the usual order, 1, 2, 3, . . .

Postulates 1–6 and Theorem I. define, in the most accurate way that modern analysis has yet determined, the linear *continuity* of a series. In other words, any series that satisfies these postulates is a *continuous* linear series. Such a series is found in the case of the series of real numbers (positive, negative, or zero) in their usual order (that of magnitude), and also in any series that is in one-one correspondence with this series. Such possibly continuous series are, space of one dimension, time, motion, acceleration, and qualitative changes in general.

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[30] Huntington, *op. cit.*, p. 44.

[31] *Ibid.*

[32] *Ibid.*

If such series are continuous in the strict sense of this term, then they conform to that *type* of order which satisfies the six postulates and one theorem just referred to. But, as before stated, *experimental* verification that there is such conformity in any specific instance is impossible, owing to the relative grossness of experimental methods. Therefore, so far as experimental methods can determine, such series as space of one dimension (and indeed of *n*-dimensions), time, motion, and the like, may be merely *dense,* or even discontinuous, but to whichever of these characteristics they may conform, a precise definition of their character is nevertheless at hand.

Thus if space, time, or any other series is *dense,* it conforms to the order type of the rational fractions, thereby excluding the irrationals, and satisfies, with the exception of Postulate 4, all the postulates 1–6, and Theorem I.; while, if such series are discontinuous or discrete, they conform to the order type of the *integers,* positive, negative, or zero, and satisfy, with the exception of Postulate 5, the postulates 1-6, but also two other postulates, namely,

Postulate 7. Every element of a discrete series A, unless it be the last, has an immediate successor,[33] and

Postulate 8. Every element of a discrete series A, unless it be the first, has an immediate predecessor.[34]

All the postulates thus far considered can be demonstrated to be *consistent and independent,*[35] and thus to furnish another instance of that principle, namely, the *theory of external relations,* which is one of the main contentions of Realism and Rationalism.

But our presentation of certain facts discovered by analysis with reference to the nature of number, makes it possible not only to state with precision *what is* the continuity, density, or discontinuity of any series that may have any of these properties, but also to define with equal precision certain other characteristics, such as *infinity* and *finitude,* that different series may possess, as well as to specify the character of the relations between different series, and, finally, to determine the status of number series in a cosmos that *ipso facto* contains all entities.

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[33] *Op. cit.*, p. 19. [34] *Ibid.* [35] *Op. cit.*, Chaps. II.-V.

Modern analysis would seem to begin, in the investigation of these problems, with the examination of *cardinal numbers,* and, as a result, to define a cardinal number as the class, N, of two or more classes that are in the relation of one-one correspondence with one another,—one and only one individual of the one class corresponding to one and only one specific individual of the other, *no matter what the order.* However, if there *is* a definite order, as in the case of the points of a line, this one-one correspondence still holds, subsisting between those points which make up a *proper part* and those which make up *the whole.* In this case there are *as many* points in the proper part, defined as that part which is like the whole, as there are in the whole. Cardinal number is defined, then, in terms of one-one correspondence, and of "as many as," but not of "how many."

Thus to define cardinal number is to make no distinction between a *finite* and an *infinite* cardinal. This distinction, however, is made by the definition, that, if the one-one correspondence is between *whole* and *proper part,* the number of elements is *infinite. Finite* is then defined as that which is *not infinite,* whereby one-one correspondence of whole and proper part is *precluded.* Thus, *e.g.,* in respect to a *unit of measurement,* a proper part does not contain as many individuals as does the whole, and is, therefore, finite.

Whereas, now, finitude and infinity subsist as a class of classes *independently of the order* of the elements of these classes, and merely by virtue of a one-one correspondence between these elements, *continuity* holds only of *ordered* classes, although the classes be but *segments,* or sub-classes, of the same ordered class, *e.g.,* of the *series of real numbers* in order of magnitude. With *as many* members in any proper part of such a series as there are members in the whole to which this part belongs, the cardinal number of elements in both part and whole is *infinite,* yet the *continuity* of the series is *not* identical with its infinity. The continuity consists, rather, in the fact that the *series* conforms not only to those postulates (1–3) (and Theorem I.) that logically determine a series, but also to the *postulates,* 4

(Dedekind's), and 5 (density), and, in the case of a linear *continuum,* 6 (linearity). These last postulates may be stated in simple form as meaning (Postulate 5) that between any two elements there is another element; and (Postulate 6) that there are elements such that the sub-class of elements before any specific element has *no last term,* and the sub-class after, no first term—from which it follows that, while the difference between members of *certain pairs* of terms of such a series is finite, the difference between the members of *other pairs* is *not* finite.

Accordingly it results, in the case of any entity, such as time, space, motion, and change, that is (1) a series, and (2) continuous, that, whereas the series is "made up" of elements that are *distinct* (Postulates 1 and 2), this *distinctness* does not mean discontinuity,[36] and, also, whereas there are finite differences between certain elements and others, nevertheless between the members of other pairs of elements there are no such differences, and therefore, in the vernacular, no gaps or sudden jumps—in the case of any kind of *change.*

X. MOTION, QUALITATIVE CHANGE, AND EVOLUTION

Our long and seemingly digressive discussion of numbers results, therefore, in conclusions that are of direct bearing on specific cosmological problems. For space, time, motion, and qualitative change of many kinds are all facts within the cosmos. Therefore, through the investigation of number, it can be shown that each of these is a series, which, if it is in any instance either continuous, dense, or discrete, is this in a very definite and precise sense—but in a sense which, although it presents empirical difficulties to analysis, discloses no grounds for discrediting analysis as such.[37]

But our discussion and seeming digression also has an importance of its own. For the number continuum is *an entity* which, in the *cosmos* of the realist, is found to have a status that is *quite independent* of space, time, motion, and all qualitative change. Indeed cardinal and ordinal numbers, integers, rational fractions and irrationals, continuity and infinity, finiteness, discontinuity, and density are each found to be *independent of* and *logically prior* to space, time, motion, and change in general *in the sense,* that they are *presupposed* by these (latter) complexes, though the converse necessitation does not hold. Or, to state this another way, it is found that *specific propositions can be asserted or postulated concerning numbers and their characteristics, and the implications of these propositions be developed, without space and time being implied.* And a similar statement can be made regarding the relation of *every logically prior science to every logically subsequent one.* This means, *e.g.,* that arithmetic is logically independent of geometry and of the science of time, as these in turn are logically prior to and independent of mechanics, physics, and chemistry. Such an independence is confirmed by the actual procedures respectively of the "pure mathematician," the geometer, the mechanist, and the physicist, as each pursues his specific investigations in independence of logically subsequent sciences.

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[36] Cf. the opposed and inaccurate view of Bergson in *Creative Evolution* and elsewhere.

[37] *Contra* Bergson's view again.

Space, time, motion, acceleration, and *change in general* are empirically discovered, and are then found to be similar to the numbers in their most important characteristics. They "belong to" order-types that subsist among the number series, they are correlated with these series, and, in general, are related to the number series in many ways. *Yet these relations are not internal.* They are, rather, *external and functional,*—in some cases, indeed, in the precise sense of this term as meaning *the subsistence of a relation of one-one correspondence between two series.*

A similar statement can also be made concerning the specific instances (1) of the relation of the rest *and* the motion of a material particle *to* space and time; (2) of acceleration *to* motion; and (3) of qualitative change in general *to* space and time. Thus, *e.g.,* both motion and rest are discovered empirically, and *not* deduced from space and time. Yet, once discovered, they are found to *presuppose,* and in certain respects to be *similar to* both space and time. These last entities, however, do not constitute either motion or rest, nor is the relation between the former two *and* the latter in any way "internal."

Motion, as it occurs in the existential world, and as also a fact in the ideal subsistential world of mechanics, is the *occu-*

pation of each point, of a series of points, for a particular instant, of a series of instants. Each particular point is occupied for a specific instant, and *not* for some other; at instant a_x, point b_x is occupied; at instant a_y, point b_y; at instant a_z, point b_z. *This* is a relation of *one-one correspondence* between points and instants. The one-one relation, R, whereby $a_x R b_x$, but not $a_x R b_y$, generates the complexes $a_x R b_x$, $a_y R b_y$, $a_z R b_z$. Motion itself is, then, *the series of these complexes,* this series being *in turn generated by an asymmetrical transitive relation,* R_{as} between these complexes *as wholes.* But the complex, $a_x R b_x$ *is itself neither motion nor rest,* as it is so often *erroneously* claimed to be.[35] Yet out of *it* and similar complexes *motion is logically* generated or organized, the secret of this being that the relation, R_{as}, is *non-additive,* so that *a whole* results that has different qualities, *as a whole,* from those of the parts. It is in this way that motion is made up of ultimate "elements" that are themselves neither motions nor rests, even as extension of one dimension is composed of elements that are not extended, and time, of instants that are not durations.

Qualitative physical change other than motion, *e.g.*, change in electrical potential, presupposes space and time in quite the same sense as does motion, so that we do not need to consider it in further detail. But, further, both motion and qualitative change may be either uniform or accelerated. Motion and change as uniform could, however, be *existent* facts without there being any existent acceleration, but the converse possibility does not hold. Rather, *acceleration* presupposes motion and change, one or both.

As has been previously stated, it may be impossible, owing to the relative grossness of empirical methods of measurement, etc., to determine whether perceptual time and space and existential motion and qualitative change are continuous in the precise meaning of this term, or are only dense, or even discontinuous. But what can be asserted and justified on the basis of an empiricism that accepts rational analysis as a means of discovery, is, that, if either perceptual space, time, motion, acceleration, or change in general, including *a universal Evo-*

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[35] For example, by Bergson, *op. cit.*

lution,[39] is continuous, or only dense, or even discontinuous, then each such entity possesses *one or the other* of these characteristics in that precise sense which is determined in and through the study of number.

If any of these entities is *continuous,* it is like the series of real numbers (in their "usual" order), and will contain elements that are ordered through a one-one correspondence with the integers, the rational fractions, and the irrationals in order of magnitude. Accordingly no element will be *next* to any other, and between certain elements and others there will be *no finite difference* or "distance." Also any "proper part" will contain *as many* elements as does the whole, so that both whole and part are *infinite.* However, *since* this one-one correspondence does *not* hold with reference to finite (measured) constituents, yet both whole and proper part contain *such constituents* as elements, *the whole* that is *infinite in one relationship* may be *finite in another.*

But if space, motion, change, and Evolution are relational complexes of the type of the ordered series of rational numbers alone, then are they only *dense* in the precise sense of this technical term. Accordingly, no element, be it point, line, plane, or instant, is next to any other, since there is another element between any two elements, although there are, also, finite differences or gaps, small though these be, from element to element. Further, any *dense* whole may be both infinite and finite, even as is the case with any whole that is continuous.

Finally, space, time, motion, change, and Evolution are *discontinuous, if* their elements are related as are the *integers* alone. Then every element, except there be a first or last, has two elements *next* to it, one before, the other after, and again are there *finite* differences. But also, since there are as many odd integers, and as many even, as there are *odd and even,* infinity is quite possible in such a series, side by side with its discontinuity, and such infinity can also cosubsist with *finitude, provided* this last means the presence, in the series, of either *a last* element, and *no first,* or *a first* element, and *no last,* as illustrated by *all* the negative integers, and by *all* the positive integers respectively. But if a series has *both a first and a last element,* and is *discontinuous,* then it cannot be both finite and infinite. For the first element can be put in one-one correspondence with 1 and the last with *n,* and in such a series there are *not as many odd* (or even) *integers as there are both odd and even.*

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[39] For an analysis of these entities see the writer's Essay in *The New Realism.*

It is evident, therefore, that in all those cases in which a *unit of measurement* is applicable to some entity that permits of measurement (the condition for this being, perhaps, that the unit of measurement and the "thing" measured are of the same *magnitude*—as a specific property), (1) *the application of such a unit* may result in *correlating* a specific part of the entity to be measured, namely, that part which has *no predecessor,* with the number 1; and (2) that the *repeated* application of such a unit may result in correlating other specific parts (of the entity to be measured) each with the *successors* of the number 1, *i.e.,* with the positive integers, so that (3) "in due time" any integer, *n,* can be reached in this way. Any entity which can be *thus measured* is *ipso facto* finite, and, also, if it is correlated only with such discrete elements (units), *discontinuous,* though it may also, in relation *to other parts,* be continuous. But it is also evident that *whether or not one succeeds* in correlating a specific part of the entity to be measured, with the number, *n,* even though a first part may be correlated with 1, depends, in some instances, on the *unit of measurement* that is used; and that, accordingly, if the number *n* is *not* reached, that which is to be measured is *endless,* while if *n* is reached the measured entity has a certain *size*—that is relative, however, to the unit of measurement that is used.

It follows from this that certain entities within our cosmos, *e.g.,* space as a whole, and time as a whole, have *no size,* and that they are *endless;* for no unit of measurement has yet been found whereby either of these entities has been correlated with a last integer, *n,* although, relative to certain arbitrarily chosen units, certain entities, such as physical and mental existents, are measured, and have a first and a last element. But even in this case, what that last integer may be with which such a last element of a measured entity is correlated, depends upon, or is relative to the arbitrarily selected unit of measurement. If this be small, the thing measured may be *very large,* while, if the unit be large, the measured entity may be small, indeed, *very small.*

But also, any entity which is *measured, finite, and of a specific size* on such a basis, may "at the same time" be *quite* outside the universe of discourse of size (and quantity) *in respect to constituents* that cannot be correlated with the integers from 1 to *n*. Thus, *e.g.,* a line that is a specific length *as measured,* is or has, as also "made up" of points, *neither length nor size.*

From all this we reach certain conclusions that form an integral part of realistic cosmology, such as the conclusion, that the spatial and temporal universe (space and time) is endless *and without size.* Likewise *the physical universe* is *as yet* endless and "sizeless," though in due time, through empirical methods, *it may be measured,* and thus have an end, and, in relation to any arbitrary unit, be of a specific size. This would be the case whether such a universe is "made up" ultimately of an energy, *e.g.,* electricity, that is continuous, or of discrete entities, such as electrons, that are discontinuous. For *a finiteness* of *two ends* is compatible with a continuity and an infinity, although such a finiteness *"side by side"* with a *discontinuity precludes an infinity* of those elements that are "discontinuous with" one another.

Finally, as regards those *strata* of the universe which are "determined" by the relation of *logical priority,*[40] one must conclude, that such strata in their logical order, *e.g.,* number $\left\{\begin{matrix}\text{space}\\ \text{time}\end{matrix}\right\}$ motion, and qualitative physical change, do not form a series that is *either continuous or dense,* but a series that is *discontinuous;* yet a series, also, that has neither *size* nor *finiteness,* since there is no common *unit of measurement, i.e.,* common quality that is a magnitude, except the attribute of *manifoldness.* Accordingly, if *number* as the first stratum can be correlated with the number 1, space and time as the second stratum with the numbers 2 and 3, motion with the number 4, consciousness with the number *n*,—at present,—it is implied *that there may be other strata,* $n + 1$, $n + 2$, $n + 3$, *beyond consciousness* which have not yet come within our specific knowledge.

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[40] See Chaps. I., II., III., XIII., XLI., and XLIII., IV.-X.

ments" of or correlations of *series,* and the like—and *not substances,* is one of the most general results of modern scientific investigation.[48]

But linear series are *organized* wholes, or *relational complexes,* that satisfy the postulates, 1, 2, 3, 6, and Theorem I. They therefore involve "elements" and *certain specific types of relations,* namely, those that are *asymmetrical, transitive,* irreflexive, and connected.

If the relations that organize elements into linear series or dimensions are always of this type,[49] then, although in special series there may also be further specific relations, it is due, in some cases at least, to the presence of qualitatively different elements, that certain series *are* qualitatively different *dimensions.* Among such qualitatively different series that we have already considered are: *time,* whose elements are *instants, a geometrical line,* whose elements are *points, space* of *n*-dimensions, whose elements are already of *n*–1 *dimensions, motion,* whose elements are *points—related in a 1–1 manner to instants.* Other and "new" series or dimensions which, however, we have not yet considered are: the class of *moral values* in order of superiority; the *events* of any causal chain, in order of cause and effect; and, finally, and for us, at this juncture, important, the *class of one's distinct sensations,* of such particular kinds as sensations of color, sound, warmth, or pain, arranged in order of intensity.

There are undoubtedly, then, many different dimensions—different in that they are qualitatively distinct—which is quite possible although all belong to the same *class, dimension.*

There are, therefore, not only dimensions, which are themselves *relational* complexes, but also *relations among or between dimensions.* Thus, *e.g.,* we have just been led to recognize that there are *relations of both similarity and difference* among dimensions—a fact that is not without considerable importance for us. For it allows us, *e.g.,* in the case of *time,* to discover a dimension that is *not spatial,* and in the case of *space,* a dimension that is *not temporal,* and therefore suggests that certain dimensions, certain linear series, *e.g., moral values,* are *neither spatial nor temporal,* but quite outside these two universes of discourse. Consciousness, also, therefore, if it should prove to be a *dimension, might* be both non-spatial and non-temporal, or either one, and not the other.

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[48] Cf. Chap. II.

[49] Cf. Huntington, *op. cit.,* p. 11.

But there are not only relations of (1) *similarity* and (2) *difference* among dimensions, but there are also specific relations of (3) *correlation,* and (4) *"multiple order,"* as is illustrated respectively by *that correlation* of space with time which *is* motion (or velocity), and by space of *more than one* dimension (multiple order).

These three cases are, now, to be carefully *distinguished* in examining the question, whether consciousness is a "new" *dimension* or not; *i.e.,* one should distinguish (1) the fact of *qualitatively distinct linear series* from (2) the fact of *correlated linear series,* and these two cases from (3) the fact of *multiply ordered dimensions or series.*

With this preparation, we may now endeavor to answer our question: Is consciousness, either "in general" or in its particular instances, *a dimension,* and, *if it is,* what are those *differentiæ* which distinguish it from other dimensions, and what are its relations to other dimensions?

In answer to these questions it may be said, first, that *consciousness* as a *generic term* is *not* a dimension, but only an (objective) concept that is identical with the fact of a resemblance in respect to the *awareness* that characterizes *all those particular instances* which we designate as conscious. Our questions refer, therefore, to *particular* entities that are called conscious, namely, to sensations, memory images, emotions, and the like.

With reference, now, to such particular conscious entities, it seems to be an undoubted empirical fact that certain ones of them do form a *series,* and thus are *dimension-like.* This is the case, as has already been instanced, with sensations of color, light and shade, sound, warmth, pressure, smell, taste, and pain in order of, at least, intensity, if not, also, of extensity. Differences of intensity may also characterize the different kinds of images, both of memory and of imagination, and, likewise, the emotions; but whether or not *reasoning* is so characterized is very much open to question.

There is also no doubt that particular conscious processes as well as certain manifolds of such processes are serial or dimensional also in another sense, namely, that they are *correlated with time*—indeed the term *conscious process* itself, as *process* is defined, connotes this correlation. Finally, certain specific fields of sensations are found empirically to form multiply ordered classes, as, *e.g.*, sensations of sound as ordered according to (1) pitch, (2) intensity, and (3) duration.

But these empirical matters have long been accepted as matters of fact in psychology and philosophy, so that the question, Is consciousness a *dimension?* means something different from what *such* affirmative answers as the above would seem to imply. Thus our question would seem to mean, *e.g.*, in the field of sensations, not, Is a specific *manifold* of sensations *serial* in such respects as intensity and duration? nor even, Is one particular sensation serial as having *duration?* but, *Is a particular sensation a one-dimensional set, over and above such generally admitted dimensionalities?* or, if the *qualitative content* and the *awareness* can be distinguished, *Is either this awareness or this content a dimension?*

If, now, these *very specific* inquiries are answered in the affirmative, it is well to inquire further what such answers imply. They *assert* that *a* sensation, an awareness, or a sensation-content is *as such a dimension.* But what does this imply? Our answer is, that it implies, seemingly, that there are *elements* —for, up to the present at least, no dimension or series has been discovered that is not a *complex,* and that does not as such presuppose *elements.*

Can, now, such elements be discovered for any particular consciousness as a dimension, and, if they can be, what is *their* character? Are *such elements* in turn *conscious* elements—"*petites perceptions*"—which, as organized asymmetrically and transitively, *are* a qualitatively specific *dimension* that *is* a sensation? *If* they are (conscious), then, however, is the problem only repeated in the form, Are *such* (*conscious*) *elements* themselves dimensions? while if they are not *conscious* elements, then is this repetition of the problem avoided.

One might as well, therefore, accept "at its own level" the problem, *Is a sensation a dimension*—apart from its duration, its membership in an intensity series, and the like? and not attempt to *derive* such dimensionality from the serial organization of "conscious elements." And one must also accept the problem, Can *elements* be found whereby as a dimension (if *such* a sensation is found to be) *it conforms to the requirements of that definition of a dimension which is generally accepted,* namely, that it is a *linear series?*

Our answer to this inquiry reintroduces *principles* that have frequently appeared, and been frequently used in foregoing discussions. Is *length one* or *many?* or, Is it *both one and many?* Yet *how* can it be *both?* Still, if it is *both* (by some hook or crook), then *as one, is it a dimension?* Yet is it not admitted to be *a* dimension—not many, but one,—perhaps indeed a dimension *par excellence?*

Such puzzles would seem to be solved by the frank admission that *length is one* (or would some maintain that it is *qualitatively* two?), and yet that is also *many*—yet not many lengths (which but repeats the problem) but many *points—organized* in a very specific way—as we have seen. This means that *its organized "manyness"* is its *oneness,* and that its *oneness, as length, is identical with its being a dimension.*

Dimensionality, therefore, does not imply either a manifold of elements that are (of necessity) *themselves dimensions, or its own complexity,* but only *a manifold* of *elements* that are (numerically) distinct from itself and that are organized by very specific relations. This is, indeed, implied in the principle, that the elements of an *n-dimensional* manifold are themselves *n*-1 dimensions—in other words, that "in" the *elements* of a *dimension, one dimension "falls out."*

Length, then, is a dimension—one, and only one—although it is made up of "elements" that are *not* dimensions. But length is also a *specific quality* in the universe, for, although there are other entities like it "to a greater or less degree," there are no others *quite* like it. Yet it is *not a quality that inheres in a substance* (the logical priority of space in reference to matter is sufficient to establish this fact). And, finally, its *oneness* is not violated by the fact that it can be called both *length* and (as a member of a class) *a dimension.*

A specific sensation may, similarly, be regarded (1) as another *"new" and distinct quality in the universe,*—quite analogous to a specific length; (2) it may be *one*, and yet, *as one*, be "conditioned" by the serial organization of *many* elements; thus (3) it may be a dimension, whether its elements are dimensions, or not, but a dimension which in its qualitative specificity is distinct from its elements (even as length is from points) and, (4) finally, it may be a quality that does not inhere in any substance.

But, if all this is the case, what *are* those elements out of which such a specific dimension is made? First, in answer to this inquiry, it has been found, that, on pain of repeating the problem as to whether a sensation is a dimension or not, the *elements must be different from that whole which they make up.*[50] But also, as has been found repeatedly, if elements are organized, *i.e., are not related additively*, then a whole may result, with properties very different from its parts or constituents. The former *demand* coincides, therefore, with the latter *principle.*

To conform, now, to both this "demand" *and* this "principle," it may be said, that *empirically* any number of *different* kinds of elements (for consciousness) are discoverable—kinds that are *different* both from specific sensation-quality and from one another—but out of which, *as organized elements, a specific sensation, as belonging to the class of awarenesses, may arise.* Such different "elements," although all of them are not known with accuracy, are those entities that are studied and investigated in such sciences as neurology, physiology, physics, and chemistry.[51] Yet, if not for all sensations, then, at least for some specific sensations, *e.g.*, my visual sensation of this specific green (of this leaf) at this minute, these elements and conditions can be *specified*, at the present time, *with a fair degree of accuracy.*

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[50] This chapter, IV., V., and VI.

[51] That there is an organization of such *non-sensation elements* is not invalidated by the objection that such a statement or position can, in last analysis, only mean that the entities which these sciences "treat of" are *themselves sensations* (or expressible in terms of sensations), so that, ultimately, what we have is sensations-organized give sensations. For this objection is but a special form of or conclusion from the ego-centric predicament, to the effect (here) (1) that, because such "elements" as atoms, molecules, colloidal solutions, nerve- and "sense-cells," nerves, ether waves, air waves, and the like, are always in relation to some kind of *knowing*, this knowing can not be eliminated in any way; and (2) that, related terms constitute or affect one another, so that (3) atoms, molecules, and the like, are really *sense-constituted* (mental) entities. Such a conclusion we have already found to be based (1) on the *purely gratuitous postulation* of the modification theory of relations, and (2) on the ignoring of a method of virtual elimination of *knowing* (of any specific form) from the entity that is known. Therefore we may say, that

But such a specification shows that these elements are *organized*, and *organized serially.* Therefore, as is the case with the serial organization of points "into" length, so also if there is a *serial organization* of ether waves, waves of air, physico-chemical processes both within the organism and without, into *one whole,* that whole which results is, in the case we are considering, *the sensation.*

All the details of such a serial organization are difficult to determine, and are as yet far from being determined. But *that the organization is serial* is shown by the facts that the mechanical, physical, and physico-chemical "elements," both within and without the organism, that "lie at the basis" of any specific sensation are *correlated* with (1) the *time* series, (2) the *space* series, (3) are themselves *a cause and effect series,* and (4) involve any number of specific correlations between the specific *variables* (series) that become the special subject-matter of chemistry, physics, and physiology.

What all the elements are, which, as organized serially, give some specific sensation as a unitary entity, is difficult to determine. Indeed, it is hazardous to preclude certain possibilities, for which at the present time there is little empirical evidence. In other words, the conditions for sensation, as well as for other kinds of consciousness—indeed other kinds than those with which we are now empirically acquainted,—may be much more varied than is at present supposed.

However, whether this be the case or not, there is *one error* that is to be guarded against in this field, and that is the *error* of assuming and dogmatically asserting that the study, investigation, description, and statement of the *"conditions," "elements," organizing relations* (and the like) of any specific kind or instance of consciousness, sensory or other, *does away with, nullifies, or makes a non-fact of the whole that results from*

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both those entities that are expressible in terms of entities that are *sensed* and also those entities that are not so expressible, *e.g.*, masses, chemical valence, electrolytic conductivity, and the like, *are,* although related to consciousness, not themselves *conscious in character.*

the organized elements, i.e., the sensation, memory image, abstract idea, and the like. That there is such a nullification is at least the tacit, if not, indeed, the dogmatic assumption of the modern school of *behaviorists.*

Such an assumption is, however, as little justified in the case of *conscious entities* as it is in the case of *length,* or, indeed, as it is in the ease of *organism, cell, molecule,* and *atom*—entities which the "behaviorist" repeatedly "uses" in his descriptions and explanations. Were the behaviorist consistent in his position of *displacing the whole by its parts,* then should he not stop, or rather hold his science in abeyance, until all has been worked out in terms of some ultimate class of entities of which all else is composed? But the behaviorist is not thus consistent. Rather, he deals with such entities as organisms, *organs and stimuli—as wholes,* and not as complexes, and, therefore, not with their constituent parts. Even so, also, is it quite permissible, if not, indeed, in some cases *necessary,* to deal with those qualitatively distinct entities called *sensations, images, ideas,* and the like, *at their face value.* Both procedures are possible in some cases, but in some cases not, as is illustrated by the fact that man's ethical relationships are open to systematic investigation, in the absence, at the present time, of, *e.g.*, any very accurate or certain chemico-physics of his nervous system.[52]

We conclude, and also now generalize, that, although precise and accurate knowledge is lacking for specific cases, nevertheless *any specific sensation and any specific consciousness is a qualitatively distinct dimension in the universe,* and, as such, a *unity in its dimensionality,* even as is length, although it "results" from the organization of *many* other *qualitatively* distinct dimensions. This specific qualitative distinctness is that which is usually characterized as the *common attribute* of those facts that we call conscious, namely, *as awareness. Awareness is, therefore, the common property of that which, by its presence, is one class of dimensions within the universe.*

What, next, is the relation of *this dimension* to others? On the one hand, it is, as we have seen, the "result" of the serial organization of other, specific dimensions. But, on the other hand, it can also, as in other instances, (3) enter as *a component dimension* into still other *n*–dimensional manifolds, and (2) be correlated with other dimensions. Thus sensations and other mental processes have *duration,* both by themselves and also as forming a series in some "life history," and so are *correlated with time.* In this last respect they are, as themselves dimensions, *components of "higher" dimensions.* But they also, or, rather, specific manifolds of them, form *series* in respect to *intensity, æsthetic value,* and thus are components of multiply ordered series.

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[52] Cf. my review of Loeb's "The Mechanistic Conception of Life," in *Science*, Vol. XXXVII., p. 333 ff.

If, now, the hypothesis, that particular instances of consciousness are *qualitatively distinct dimensions* within the universe, can thus be worked out in some detail, in a fairly satisfactory manner, the further question now arises, *whether this hypothesis is also compatible with other positions that have been advanced in this volume.* For example, is our present hypothesis consistent with the views (1) that an external relationship is presupposed as the condition for there being genuine knowledge; (2) that there are *non-existent efficiencies,* such as ethical ideals, and (3) that particular conscious entities, such as sensations, images, emotions, and reasoning processes, appear and disappear, come and go?

The answer to each of these questions is "yes." Indeed, in a way, each has already received such an answer. Thus we have found that if any kind of a *process* or event is analyzed, it proves to be *serial* in character, and in this respect to be a dimension. Motion and qualitative change are excellent examples of this, as we have previously seen.[53] Then there is no difficulty in *identifying a conscious process and a conscious dimension,* and of thus conjoining the usual psychological with a philosophical point of view.

But an answer to the first question is also ready at hand. For it is one of the principles previously developed that a non-additive relation (such as is present in a group of elements organized as a dimension) results in a (synthetic) creation[54] of new properties, which properties are, *not causally, but functionally related to, i.e., correlated with, the (properties of the) con-*

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[53] VII.-IX. of this chapter.

[54] *E.g.,* this chapter, IV.-VI.

stituent parts. Such a relation is, however, *external.* It is exemplified in the instance of a 2-dimensional spatial manifold (a plane) in its *one-one correlation* with a 1-dimensional manifold (a line),[55] and also in the instance of a *red-hot iron* whose color, as the iron cools, gradually changes. Such a change of color is, now, *a qualitative change.* Undoubtedly it is a change that is correlated with motion—*i.e.,* with the motion of the molecules and atoms and, perhaps, electrons that "make up" the iron, as well as with "ether waves" and the like. But, if one *principle of creative synthesis* is correct, the color is not identical with such motions, nor, if our solution of the problem of illusory objects[56] is correct, is the color *subjective,* because it is *not identical with such motions.*

By this last solution it is, rather, *objective,* though its *locus* is not the same as is that of motion, *i.e.,* it is not identical with the "universe of discourse" of motion. Accordingly, the *change* of color, which change is itself *a series or dimension,* is an objective series that, while it is correlated with another, or a number of other specific series (motions—as well as space), is *not identical with these, much less caused by them, and is in this sense external.*[57]

Finally, our second question can be answered affirmatively. For, on the one hand, we have already found evidence for accepting *non-existent efficiencies,*[58] and, on the other hand, if it is efficiencies of some kind that must be *serially* organized as the "condition" for the "appearance" of a particular consciousness *as a dimension,* then we *now* have evidence of the serial organization of *non-existent efficiencies* in the case of space. For, if space is the *condition* for all that (physically) *exists,* it does not itself exist, but only *subsists.* In a manner, therefore, that is similar to the serial organization of *points* to form 1-dimension, and of a *manifold of one-spatial dimensions* to form a 2-dimensional manifold, etc., *any and all non-existent subsistents may be serially organized* (as, *e.g.,* are moral values), and thus *as efficiencies* account for the appearance of consciousness, *if* consciousness is to be accounted for in this way—namely, upon the basis of some kind of *stimulus* (efficiency)—with accompanying *response.*

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[55] Cf. Huntington, *op. cit.,* pp. 60-62.

[56] This chapter, I.-III.

[57] Cf. Chaps. I., II., III., and the whole of Section IV.

[58] This chapter, I.-VI.

Two or three further points that are involved in this "dimensional view" of consciousness now remain to be discussed. One of these points concerns the question, *whether this view is reconcilable with the hypothesis,* which has also been advanced in recent discussions, *that consciousness is a relation.*[59]

The reply to this inquiry is, that one can discover certain possibilities of such reconcilement—certain main outlines—even if one cannot work out all the details with precision and accuracy, after the manner of certain sciences, *e.g.,* mechanics. One is thus in much the same position as was Galileo when he discovered that, *e.g.,* velocity was a function of time (such a relation being the correlation of two *variables*), but was not able to discover all those details which subsequent analysis has found in the functional relation.

Such a reconcilement is attainable again upon the basis of *principles* that have been previously developed. Thus it has been found that certain relations as organizing certain complexes are the basis on which other relations rest.[60] For example, the *relation of implication* rests, in some instances, on a twofold relation of inclusion between classes, ($A < B$, $B < C$ *implies* $A < C$). Also, if two classes are each organized serially, then do *the relations which so organize the classes, form the basis for the relation of 1—1 ordinal correspondence* between the two classes. And, finally, if certain relations organize elements into a unitary whole, as, *e.g.,* asymmetrical and transitive relations organize points into a line, then is there also *a relation between the unitary whole and the organized elements.*

The situation is not different in the case of consciousness, if consciousness in any particular instance is a *dimension,* and thus a unitary whole that results from the serial organization of certain specific "elements." For under these circumstances *there can be a new relation* (as we *have* found that *implication* is new) that may be called the "conscious relation," and there most certainly *is* a relation between this new dimension, consciousness, on the one hand, and both its "elements" and other "things," on the other hand. *But whether the consciousness*

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[59] By, *e.g.,* Woodbridge, *loc. cit.*

[60] Chap. XIII., I.

itself can justifiably be called a relation is questionable, even as would be the case, if a line were called a relation. A line is a relational complex, as well as *a line,* and it can be a related *term* in other complexes; but it certainly does not seem to be a relation. Even so, then, with *consciousness as a dimension.*

In this respect, therefore, the two recent hypotheses as to the nature of consciousness, the one, that it is a dimension, the other, that it is a relation, seem to be irreconcilable, and, to the writer, the advantage seems to lie with the former hypothesis. This conclusion is strengthened by the fact, also, that those who defend the second hypothesis fail to specify *to what type of relations* consciousness (as a relation) belongs,—*i.e.,* to specify whether it is, *e.g.,* symmetrical, asymmetrical, transitive, intransitive, and the like. This failure is, accordingly, rather damaging, in the light of that detailed knowledge of relations which we now have,[61] to the contentions of those who advance this second hypothesis.

The first hypothesis seems, therefore, to have the advantage. For it is an hypothesis that can be worked out in fairly precise and accurate agreement with *the modern theory of dimensions,* and comports accurately, also, with the empirical facts, (1) that perhaps all of the different kinds of sensation and of images form *series* as regards intensity and extensity (*e.g.,* loudness of tones), (2) that among sensations there are, as we have seen, *some* instances of *multiply ordered series, e.g.,* tones, (3) that all conscious processes are *correlated with the dimension, time,* and (4) that in the field of *rational* processes, there is a conformity with the system Σ.[62] Finally, such an hypothesis conforms to that tendency which is one of the dominant characteristics of modern, exact science, namely, the tendency, or the effort finally to formulate *laws* in the form of *equations between variables,* of the general form, $y = f(x)$. *But a variable is a series,* whether it also be continuous, dense, or discontinuous, and it is also a *dimension,* whether it be linear, or multiple. Therefore, if consciousness is a dimension, it is also a variable, which means that investigation should be directed to ascertaining what variables are specific functions of it, and of what variables *it* is a specific function.

[61] Chaps. II. and XXVII.

[62] See Chap. II.

Whether, now, philosophical and psychological investigation has as yet been directed, *to any great extent*, at least, to finding out what the "place" of consciousness *as such a variable* in the universe is, may well be doubted. And yet, in the absence of the precise results that might be won by such a procedure, the position or hypothesis that consciousness is a dimension, does seem to solve, in a general way, certain problems that other hypotheses fail to solve.

One such problem is presented by the *question*, as couched in the *naturalistic* terms of physics, chemistry, and biology, or in terms, namely, of *cause and effect* alone, as to *how*, if *any specific consciousness is the final effect within the body, or within the head, or, even more precisely, within the cortex of the brain*, such a consciousness can ever refer to, or "get out" to, an object that is remote from the cortex either spatially or temporally. Thus, to take an example, *if* my present sensation of a distant star is only the causal effect *in me* of a "stream" of light waves that "started from" the star perhaps many hundreds of years ago, then is not that which I sense or perceive the *causal effect in me* (in my cortex, or brain, or head, or body) and not the star at all? And does not this compel us to accept that which is the essential position or conclusion of Subjectivism, that *that which I (directly) know is only my own ideas*, as the causal effects, *in me*, of some kind of external cause (either God, or things-in-themselves, and the like)? Or, if this conclusion itself in turn gives rise to too many difficulties and problems,[63] then does not the view that consciousness is an end causal-effect force us to conclude that it can "get to" its object only by means of some such *medium* as *potential energy* defined as the *inverse* of the "incoming streams" of kinetic or active energy?[64]

It is quite clear, then, that if consciousness is regarded as such a causal-effect, such an *"end-term,"* it most certainly does seem to be *shut in*, so that we have the problem as to how it ever can get out—to have as its "content," *e.g.*, the spatially distant star, or the temporally distant past or future event. However, the very statement of the problem in these (causal) terms readily suggests the means of its solution, *i.e.*, it suggests that the way to solve the problem is to take *such a view* of the nature of consciousness, as does *not* make of it an *end-effect* in an *incoming* stream of physical energy. But such a view is the position or hypothesis that consciousness is a "new" *dimension* and a *variable*. For, if it is a variable, then, *a priori*, one must grant that it can enter into the same types of relationship to other variables that these enter into among themselves. And it is the possibility of such relationships that solves the problem above outlined, as well as other problems.

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[63] See Chaps. XXIX.-XXXII.

[64] Montague, in his essay, "Consciousness a Form of Energy," in *Essays in Honor of Wm. James.*

What, then, are some of these types, or, rather, the *principles* that are involved in such types of relationships? In answer to this inquiry, one has first to say, that *variables are correlated*, either in a one-one, one-many, or many-one manner. But more important is the principle that such correlation allows of the *qualitative discontinuity* of the correlated variables, as well as of *the most radical qualitative differences* between them. Thus, *e.g.*, that $p = f(t)$ (pressure a function of temperature) does not imply that pressure and temperature are identical *qualitatively;* while, if a "proper part" of a line is correlated in a one-one manner with a whole line (in respect, of course, to points), then the proper part may be *very small*, and the whole *very large;* indeed an inch is in such correlation with the distance of a million miles. Further examples of one or the other of these two principles, or of both together, are the correlations (1) between *time* and *space*, (2) between the gradual change of *color*, or of *temperature*, *and* the *motion* of atoms and molecules, and (3) between the points of *all space* (of any number of dimensions) *and* the points of a *line*.

As applied, now, to the hypothesis that consciousness is a dimension and a variable, these principles have an important bearing on the solution of the specific problem just previously considered, as well as other problems.

For, first, with it granted that the "conditions" for consciousness are both spatial and physical, then, if consciousness itself is a new dimension that "arises" through the *non-additive organization* of such conditions, *it follows*, that consciousness itself *need not be either spatial or physical in* order to be correlated with spatial or physical "things," as well as with those entities that are *in any way whatsoever qualitatively different from itself,* such as those entities that are *neither physical nor mental* (conscious).

In this respect, therefore, consciousness is *extra-spatial—i.e.,* non-spatial and extra-physical, and, accordingly, not the kind of entity that can be *spatially shut in* within body, head, brain, or cortex. Clearly, however, if it is not shut in, there is no problem as to how to get it out—*e.g.,* to the distant star. But, if it is not shut in, if it is non-spatial in character, then it is neither *here* nor *there,* and yet, even as time can be correlated with space, without being spatial, so, also, can consciousness be correlated with spatial "things" without being itself spatial. Thus it is that we can understand *how, e.g.,* the distant star or, in fact, any object that is spatially distant from our bodies, should be "content" of our consciousness, without our consciousness spatially reaching out to the object that is "content." The consciousness is not "first" *in* our bodies, brain, or cortex, then to be got to the distant object, but is, rather, a "new" dimension that arises from the very special organization of "elements" of which *distant object* and *body* are each members. Yet it must be admitted, if all this account is true, that *why* it should be *some* members and not others (of the organized series of elements) that are the specific content of a specific consciousness, is a special problem that is not yet solved.

However, an account very similar to that just given of the *correlation* of the variable, consciousness, with physical and *spatial* entities, can also be given for its correlation with entities that are *remote in time,* either past or future. For if it is a principle that proper part is in correlation with whole (*e.g.,* an inch with a million miles in respect to points), then a particular consciousness "lasting" but a short time, can be correlated with a much larger time, and thus reach into both the future and the past, and, accordingly, have as its "content" an object that itself is correlated with a specific part of such past or future time. In some such way as this can the fact be accounted for, that particular complexes that now no longer exist or that do not yet exist, so that they cannot "send" incoming streams of energy to my brain, can nevertheless be "content" of my consciousness, Such an account of the "ability" of consciousness to "transcend" itself temporally and qualitatively is undoubtedly deficient in a great many respects. Yet it is an account that seems to the writer to have many advantages over that traditional account which starts with the tacit or explicit assumption, that consciousness is a *substance,* or an end causal-effect on an ego or spirit that *is* a *substance,* and which is so productive of *false problems* and of philosophical *culs-de-sac* and *impasses.* But it is also some such *an account* as must be made, if the hypothesis that consciousness is a *dimension* is to be anything more than a purely philosophical *speculation.* Such an hypothesis and such an account seem, however, to lead in the direction of philosophical progress and advance to a much greater extent than does persistent adherence to the traditional point of view in which consciousness is regarded as a substance, or in which it is tacitly assumed that problems are solved if they are ignored.

CHAPTER XLIV

EPISTEMOLOGY AND PSYCHOLOGY AS PART OF COSMOLOGY

It is quite evident that in the foregoing presentation of realistic cosmology we have already entered the domain of those problems that in Section II. of Part I. were called *epistemological* and *psychological.* But why should we not do this? Are not knowing and consciousness undeniable facts in some sense? Are they not within the *universe,* and, indeed, within the *cosmos as that universe* in which entities are related not only in one, but in many ways, with the same type of entity and of relation *recurring,* perhaps, many times? Finally, must not all entities be so related to certain *other entities* of the cosmos-universe as to allow themselves to be known, as unmodified by virtue of being known? For, since in any case it is presupposed that *some* entities of the universe, be these complex or simple, *are* *so known,* must it not be granted that all entities are, similarly, *knowable,* unless very good grounds to the contrary can be advanced? Our answer to these inquiries has been given many times and in many places,[1] but now all our positive solutions to these problems take their place in a *realistic cosmology and psychology.*

It is epistemological difficulties and problems that force us to the conclusion that consciousness and awareness cannot be a *substance,* and must be either a dimension (variable), a relation, a quality, or an event. These entities cannot be a substance, except at the cost of making any genuine knowledge, even of themselves, impossible.[2] But at least *some such knowledge* is presupposed by each and every epistemology! Accordingly, some *alternative* hypothesis accounts not only for the situation that is presented by this presupposition, but also for all other cases of genuine knowing or awareness.

But there is not alone genuine knowing, but also *error*—of many kinds. And yet, with the substance-view of consciousness invalidated, the possibility of consciousness being a "container" is invalidated, so that error-objects can no longer be regarded as *subjective* in the sense that they are *contained* in consciousness, but they also must be accepted as objective. The only *residual* subjective element in error is, therefore, the "taking" of "something" to be that which it is not.

If, now, realistic psychology and epistemology must take their place in realistic cosmology, all the positive developments and conclusions, particularly of Chapters XIII., I., XXVII., XL., and XLI., must be accepted as accounts of specific phases or parts of the *cosmos,* and thus be included *realiter* in Chapter XLIII.[3]

As a fitting conclusion or complement, therefore, to all these preceding *cosmological* accounts, and from the point of view that any and all entities are "somewhere" in the cosmos and are *objective,* we may now attempt a classification of entities whereby some of their relations to one another, and their qualitative divergence from one another, shall be presented.

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[1] See, *e.g.*, Chap. III., and the criticism of systems opposed to realism, Chaps. XXIX.-XXXVIII.

[2] See Chap. III.

[3] For other features of realistic epistemology, see Chaps. I., II., III., XII., XIV., XXI.-XXV., XXVI., XXVIII., and the criticism in Chaps. XXIX.-XXXVII., XLII., XLV., and XLVI.

Such an attempt is directed to the recognition of certain specific types or kinds of entities, and, therefore, to the occurrence of certain relations, especially those of similarity and difference among individuals, and of the inclusion or exclusion, complete or partial, of the "resulting" classes.

The *individuals* of a class are either absolutely *simple individuals*, such as points, or *complexes.* Complex individuals consist, ultimately, of "absolute simples," of which, seemingly,[4] there are a number of different kinds, but they may also be *complexes* of complexes. In fact, most of the entities or wholes within the cosmos are of *this type.* But, in either case, a complex is a whole that is *organized* by one or more specific relations, some of these relations being independent of and logically prior to others. Thus, among complexes, one can distinguish mere collections, classes, series, "wholes" of *correlated* series, organic wholes, and the like, and then ascertain that the relations that organize certain of these complexes, as, *e.g.*, *similarity* organizes a class, are *independent* of those relations that organize series and organic wholes, as, *e.g.*, an asymmetrical and transitive relation organizes a series.

The universe, now, is the *totality* of *all* entities, whatever these may be, as related merely additively. The *cosmos* may be defined, accordingly, as this universe of entities as *related* other than *merely additively.* Such non-additive relations, which subsist "over and above" mere additiveness, are those relations that generate classes, series, and the like. But the *universe-cosmos* is all-inclusive. There is, then, "place " in it for such entities as (1) a *perpetuum mobile,* (2) "phlogiston," the hypothetical substance that was held, in the eighteenth century, to be present in all combustible bodies, (3) the snakes of delirium tremens, (4) ghosts, (5) centaurs and satyrs, (6) future and *past* happenings in distinction from present, (7) *this table* on which I am writing is distinction from (8) *table in general,* (9) *apparently* converging rails and bent sticks, (10) the motion and rest of material bodies in distinction from (11) space and time as conditions. The words that have just been used stand for "things" that are *entities in some sense,* or that at least cannot be dismissed as *mere nothings, without investigation.*

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[4] See Chaps. XXI., XXII., XXIII., XXVI., XLIII., IV., VII., VIII., IX., X.

One traditional and short-sighted way of treating this problem of classifying such entities as have just been mentioned, is to make some of them *"unreal." False* hypothetical entities, such as "phlogiston," normally and abnormally *imagined* entities such as centaurs and the snakes of *delirium,* and even, indeed, future events, are often so classified. But *manifestly* even "unreal" things are in some sense facts *within the universe,* so that it is incumbent on a systematic and scientific investigation to determine the character of the "unreal." A *second* traditional method of classification aims to do this. It places *all unreal* entities *in the subject,* or makes them *subjective,* in opposition to other, *real* entities, as objective. Even space and time and *all* relations, as opposed to substance-like terms, have been "given" this subjective *locus* by certain philosophical systems.[5] This solution of the problem has, indeed, become a *ready-made* answer that is accepted *without further reflection* by perhaps the majority of philosophically inclined persons. By it, although there is much lack of clearness and precision in the matter, *the subjective* is identified with *the mental* or psychical, and the objective with the physical, and *"the psychical"* is then made to *contain all "unreal" entities.*

An analysis of this solution shows, however, that it is really derived by assuming the *psychical* to be a sort of *substance,* whereby it can be a receptacle or container. This view of consciousness is, however, beset with so many difficulties in its implications, etc., that it must be given up, and such an hypothesis accepted as makes of consciousness a dimension and allows *all entities* to be *objective* in the sense that they are at least not *in* a "psychical container."

Proceeding, now, from this point of view, we find that *all* entities that come within the field of awareness would seem to be similar in the respect, at least, that they are *mentionable.* "Entity" itself is a means of *mentioning* them. *But not all "mentionables" are entities.* That they are *not,* is shown by one or another of the several empirical tests that are at our disposal. Thus, some "mentionables" are found to be merely

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[5] See Chaps. XXIX. and XXX.

combinations of words, as, *e.g.*, are "round square" and "black whiteness." *Each part* of such combination-words may, perhaps, be employed in order to *mention* entities, but the entities thus indicated, as, *e.g.*, *round and square, exclude* each other, and subsist at different *loci*.

As entities, therefore, we can accept only such as do not involve, if they are *complexes*, characters that exclude and force one another into different universes of discourse, *or* such as furnish *no occasion for exclusion* in that they are absolutely simple. Let us call whatever fulfils these conditions a *"consistent." All "consistents," then, are to be accepted as entities, and an entity is to be defined as a "consistent."* From this definition it follows, that whatever appears to, or is given as *content* in, any mode of awareness, be this perception, memory, dream, illusion, imagination, reason, or intuition, is therewith a "consistent" and an entity. For the fact of the mere *"givenness"* of the *co-presence* of several characteristics *establishes their consistency*, and, therefore, the "entity-character" of the complex. The question of exclusion does not, of course, arise concerning simple entities, or, if the apparently simple proves to be complex, then its consistency is established with its "givenness." By this test certain words or symbols are found *not* to designate entities at all, "round square" being a good example. *Individual round things* and also *roundness* are entities, and so are *square things* and *squareness*, but no "round square" is ever *given* in any experience.

Among entities, however, empirical methods reveal *two classes*, namely, those that *exist*, and those that do *not* exist. The former are called *existents*, the latter, *non-existent subsistents*, or merely *subsistents*. *All existents subsist, but not all subsistents exist.* In proceeding here one must rely wholly upon the verdict of empirical methods in science and common sense in which innumerable things, qualities, events, and relations are *accepted as existing*. From such instances one can derive a partial definition of an *existent*, namely, that it is an entity that either *has been, is now, or will be "at" or "in" a particular place, at a particular* time, or merely at a particular time, if the entity is not spatial, as, *e.g.*, a conscious process is not.[6]

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[6] See Chap. XLIII., xi.

"Occupy" or "correlated with" a particular place and time, or a particular time, alone, are also terms that may here be used instead of "at" and "in." "Particular place" and "particular time," are, however, *relative matters.* By themselves space and time include *individual* extensions and durations, even as any one point is that individual point and not another. But aside from this individuality there are *no differences* among extensions, except those between one-, and two-, and three-dimensional spatial extensions, and, also, durations. Our living, however, is *"earth-centered"* and *twentieth century pivoted,* and *in relation to this* other spaces and times are *particular* in the sense in which the term is used above.

But to be "in" or "at," or "to occupy" a "particular" space and time, both, or only one, is not enough to define or characterize *existents.* For other entities, such as dream objects, also have this spatial and temporal particularity. Therefore a complex *existent* must have *that full quota of characteristics,* or *be* that full quota, which the sciences of physics, chemistry, biology, psychology, and the like, find it *empirically* to have.

Existents, thus defined, are of *two* kinds, namely, *physical* and *mental.* Physical existents are things, forces, energies, qualities such as solidity and elasticity, relations such as cause *and* effect, and events such as the falling of bodies and the flow of electrical currents. Among such physical entities are *both those that are directly perceived and those that are inferred* in order causally and functionally to explain those things, forces, etc., that *are* directly perceived.

Mental existents are, analogously, to be accepted essentially as they are interpreted by empirical psychology, namely, as processes or events that occur at *a certain specific time.* Seemingly they occur at a specific time because that which *conditions* them (yet does not cause them), namely, a nervous system of a certain degree of organization, *and* in a certain specific condition, *is at that time.* In this respect, at least, mental events or processes are temporally "located," and are in a temporal series. However, this does *not* mean that they themselves are limited temporally, as are their conditions. For, similarly, an organism as a whole manifests certain characteristics, such as the power of "selective response," reproduction, and the like, that are *conditioned* by physical and chemical forces, but that are *not* characteristic of these *conditions*. So also are there finite moral beings only if there are biological and physiological beings. Yet the morality subsists only in the field of the relationship of such biological beings to one another, and *not* in the *conditions*. In general, the examination of any number of concrete cases shows that the characteristics of the whole may differ radically from those of its conditions and its parts. *The non-temporal and non-spatial character of consciousness as such, side by side with the temporal and spatial character of its conditions, is but another instance of this principle.* It is, then, by an indirect reference to the conditions that the temporal (and, perhaps, the spatial) location of specific conscious processes is arrived at. It is for these reasons that we shall classify existents as of two kinds, namely, physical and psychical, including under each of these classes *all those sub-classes* that are usually so included in the physical sciences and in psychology.

Empirical methods, experimental, rationalistic and analytical in character, compel us, next, by a process of exclusion, to accept another great class of entities for which the name *subsistent* is accepted by a number of investigators.[7] These entities are, on the one hand, *experienced*, and are found not to be self-contradictory; *i.e.*, they are "consistents." Yet, on the other hand, they are *not* existents; for they are found to lack those qualities, or at least that *full quota* of qualities, including temporal and spatial localization, which psychology and physics recognize as essential to objects that *exist*. Therefore they are excluded from being *psychological* in character (as tradition has so long held them to be), by the hypothesis, now accepted at this point as established, that consciousness is not a substance or "container." Examples of subsistents are the "perpetual motion" machine of pure mechanics, the dreamt "falling from a roof," the centaurs and satyrs of the Greeks, and the substance, "phlogiston," of the eighteenth century.

Yet there are differences among subsistents—differences revealed by the mode of their discovery, even as is the case with color and sound. Thus some subsistents are discovered by reason, others by dreaming, still others by "waking" imagination. For example, it is found by reasoning, that the transfer of energy in the physical world *would* take place "round and round," say, from electric generator back to dynamo and to fly wheel, *provided ever-dissipating heat were not produced, and also provided that a "potential fall,"* analogous to the fall of water through a flume, *were not a necessary condition for each and every transfer of energy. Existentially,* however, ever-dissipating heat energy (with equalization of temperature) and "potential gradients" are the *facts.* Yet "conditions" that are contrary to these facts can be postulated, and reasoned from, and thus an ideal, *perpetuum mobile,* be deduced.

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[7] *E.g.*, by Holt, Marvin, Perry, Pitkin, and Montague in *The New Realism* and other volumes.

Such a subsistent as a "perpetual motion machine" is both spatial and temporal, yet is not correlated with a particular space and time. On the other hand, other subsistents are correlated, not with *any* but with *a* particular space and time, and yet are only subsistents because, *e.g.,* in the case of dream-objects, they *lack* that *full quota* of attributes which the physical sciences have found to be empirically necessary for the existent objects of each special field of investigation.

Finally, there are still other subsistents, especially space, time, and number, which, on the one hand, are open to investigation by reason, and, on the other hand, are found to be the *conditions* for, in one way or another, those entities that do exist. But, as not being such conditions for themselves, they do not exist, but subsist.

With this as a preliminary discussion and illustration of differences that subsist among some of the entities of the universe, that more complete classification which rests upon these and still other differences (and similarities) may now be presented.[8]

[8] Cf. with the presentation and classification that follows, especially as sympathetic to the doctrine of "subsistents": Plato, *Republic,* especially Books V., VI., and VII., *Theætetus, Parmemides, Phædo,* and *Cratylus;* A. Meinong, *Gegenstandstheorie,* 1904, especially the essay by E. Mally, pp. 121-263, *Über die Stellung der Gegenstandstheorie im System der Wissenschaften,* 1907; B. Russell, "Meinong's Theory of Complexes and Assertions," *Mind,* N. S., XIII., pp. 204 ff., 336 ff., 559 ff.; "On the Relations of Universals and Particulars," *Proc. Arist. Soc.,* Vol. XI., 1911-1912; *Problems of Philosophy,* pp. 127-157; *Principles of Mathematics,* p. 449 ff.; R. B. Perry, *Present Philosophical Tendencies,* Chap. X.; W. H. Sheldon, "The Metaphysical Status of Universals," *Phil. Review.,* Vol. XIV., 1905; R. H. Nunn, *Aims and Achievements of Scientific method,* p. 4 ff.

- "Consistents" or Subsistents
  - Existents (perceived and inferred, remembered and imagined)
    - Present (that which is correlated with same instants with which my body and my sense perception is correlated).
    - Past (that which is correlated with time-periods that precede the present).
    - Future
      - Physical
        - 1. Simples
        - 2. Complexes
          - a. Things.
          - b. Events.
          - c. Appearances, such as convergence of rails.
          - d. Qualities.
      - Psychical
        - Any process, simple or complex, of perceiving, remembering, imagining, reasoning, willing, and all emotions.
          - a. Events.
          - b. Appearances.
          - c. Qualities.
  - Non-existent Subsistents (in some cases non-spatial and non-temporal); also perceived and inferred, remembered and imagined.
    - Implied subsistents; discovered by reason;
      - 1. Entities presupposed as logically prior conditions for existents: relations, such as similarity and difference; classes as *such;* numbers, space, time, logical principles; series, infinity, and continuity.
      - 2. Simples and complexes; terms and qualities.
      - 3. "Ideal" entities, contrary to existent fact, yet discovered by reason; some spatial and temporal (in general), some not. Examples, *perpetuum mobile,* "ideal" justice.
    - Experienced, but not implied subsistents; some spatial and temporal, and some not.
      - 1. "False" hypothetical entities, *e.g.*, phlogiston.
      - 2. Imagined entities, such as centaurs and satyrs.
      - 3. Illusory and hallucinatory objects (dreams), such as the "snakes" of *tremens.*

It is to be remarked in final comment on this classification, that all of the entities included in it—and it is intended that any kind of "mentionables" which can lay claim to belong to the universe *as a fact of some kind* shall be included—are *objective to* and *independent of* the knowing consciousness into whose field, as a specific dimension or variable, they enter. The whole scheme of the classification is one that is in *denial* of the historic principle, that any entity *as known* is to some degree dependent on, or modified by, the knowing. This does not deny, however, that *that series* of relating consciousnesses which *is an individual consciousness,* or that *that series* which in history and tradition *is* the development and *organization of many individual consciousnesses together,* is not characterized by *certain specific attributes* of its own. The principle of our classification would demand *only* that such attributes and such consciousnesses are *quite objective to the consciousness that knows them.* The classification *also stands in opposition both* to *the monistic principle,* that an underlying unitary entity can alone mediate the relations between the various kinds of entities of the classification, and *to the pragmatic principle,* that the several *types* of entities are the mere inventions and useful schemes of a stream of human consciousness that has come down through the centuries.

BIBLIOGRAPHY

The following is a further general bibliography of modern realism: E. B. Holt, *The Freudian Wish*, 1916, *The Concept of Consciousness*, 1914, *The New Realism* (with others), 1912; W. T. Marvin, *First Book of Metaphysics*, 1912; R. B. Perry, *Present Philosophical Tendencies*, 1911, *Moral Economy*, 1909, *Approach to Philosophy*, 1907; B. Russell, *Principles of Mathematics*, 1903, *Philosophical Essays*, 1910, *Problems of Philosophy*, 1911, *Scientific Method in Philosophy*, 1914. ARTICLES: Alexander, "Sensations and Images," *Proc. Arist. Soc.*, Vol. X., 1909-1910; "Program and First Platform of Six Realists," *Jour. of Phil., Psych., and Scientific Methods*, Vol. VII., 1910, p. 393 ff.; Dewey, "Brief Studies in Realism," *Jour. of Phil., Psych., and Scientific Methods*, Vol. VIII., 1911; Dewey and Spaulding, "Discussion," *Jour. of Phil., Psych., and Scientific Methods*, Vol. VIII., pp. 63 ff., 77 ff., 566 ff., 574 ff.; W. Fite, "Theories of Independence," *Jour. of Phil., Psych., and Scientific Methods*, Vol. X., p. 548 ff.; E. H. Hollands, "The Externality of Relations," *Jour. of Phil., Psych., and Scientific Methods*, Vol. XI., p. 463 ff.; I. Husik, "Theories of Independence," *Jour. of Phil., Psych., and Scientific Methods*, Vol. X., p. 347 ff.; A. O. Lovejoy, cf. note 3 of previous chapter; W. P. Montague, "The New Realism and the Old," *Jour. of Phil., Psych., and Scientific Methods*, Vol. IX., p. 39 ff.; and "May a Realist be a Pragmatist?" *Jour. of Phil.,*

Psych., and Scientific Methods, Vol. VI., pp. 460 ff. and 485 ff.; G. E. Moore, "The Nature and Reality of Objects of Perception," *Proc. Aris. Soc.*, Vol. VI., 1905-1906; and "The Refutation of Idealism," *Mind*, N. S., XII., 1903, p. 433 ff.; M. T. McClure, *A Study of the Realistic Movement in Contemporaneous Philosophy*, dissertation, 1912; E. B. McGilvary, "The Relation of Consciousness and Object in Sense Perception," *Phil. Review*, Vol. XXI., 1912; R. H. Nunn, "Are Secondary Qualities Independent of Perception?" *Proc. Aris. Soc.*, Vol. X., 1909-1910; R. B. Perry, "Realism as a Polemic and Program of Reform," *Jour. of Phil., Psych., and Scientific Methods.*, Vol. VII., pp. 337 ff. and 365 ff.; J. B. Pratt, "Professor Perry's Proofs of Realism," *Jour. of Phil., Psych., and Scientific Methods*, Vol. IX., pp. 573 ff.; B. Russell, "The Basis of Realism," *Jour, of Phil., Psych., and Scientific Methods*, Vol. VIII., p. 158 ff.; E. G. Spaulding, "Postulates of a Self-critical Epistemology," *Phil. Review*, Vol. XVIII., p. 615 ff.; N. Kemp Smith, "Subjectivism and Realism in Modern Philosophy," *Phil. Review*, Vol. XVII., Stout, "Primary and Secondary Qualities," *Proc. Aris. Soc.*, Vol. IV., 1903-1904; R. S. Woodworth, "The Consciousness of Relations," *Essays in Honor of Wm. James*, p. 485 ff.

CHAPTER XLV

THE REALISTIC DOCTRINE OF VALUES

As included in the classification just presented, one important group of entities remains to be discussed, namely, the so-called *values* or *worths*. These must now be considered in order that their character and their relationship to the other entities of the classification may be determined. In other words, their position in a realistic cosmology must be found in order that any claim may be set up that this great and perhaps all-inclusive problem has been examined at all exhaustively.

Several subordinate problems are very generally recognized as falling under the problem of values.[1] For example, What is *the value* among all values, in other words, *the highest value* in relation to which all others are but *species?* Is it The Good, or The Beautiful, or The True? Also, what is *the specific relationship* of *values* to other entities that are *not* values? Further, are values *objective*, or are they *subjective* in the sense that their *esse* is their *percipi* or *concipi?* For example, is beauty in an object dependent on one who perceives, or who thinks an object to be beautiful, or is it not?

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[1] Cf. Chap. IX.; also see the report of the discussion on values at the thirteenth meeting of the Am. Phil. Assoc., *Jour. of Phil., Psych., and Scientific Methods*, Vol. XI., p. 57 ff., by H. C. Brown; see also Perry, "The Definition of Value," *Jour. of Phil., Psych., and Scientific Methods*, Vol. XI., p. 141 ff.

Not all of these questions, however, will be considered, nor will the question as to whether or not there *are* values. For, *that there are* within the universe certain entities which are *values* or *worths*, is a position that is widely accepted. Few deny it in theory; none can deny it in practice.

We shall grant, therefore, the factuality of values, and proceed to a discussion of a few important problems concerning them, using for our examination such important instances as *justice, beauty, obligation,* and *pleasure.*

We shall first consider certain typical problems that concern the cosmological *status* of justice. As concerns the legal aspects of this value one need only remind himself that justice is recognized as perhaps the dominant principle in the legal enactments of modern nations; while *to act justly toward* and *to think justly of* our fellow-men both in those instances that are covered by law and in those that are not, is a widely accepted rule of ethical (correct moral) action. The point to be noted, then, is, that here, as elsewhere, there would seem to be *a distinction* between the *individuals* and the *state of affairs* that holds of them. Thus, in this instance, there are *just acts* and *just persons,* and of these, *in that they are similar in respect to being just, justice holds.* Indeed, we have here but another instance of an objective concept and of the individuals of which the concept holds,—as, *e.g.*, is the case, also, with *humanity* and *individual human beings.*

One of the important questions that concerns at least certain classes of values, of which justice is typical, may now be raised *in specific form. What is the status of that perfect justice* which none would be so daring as to claim is realized in any human society or in the life of any one human being, or, indeed, in any single human act, *but which nevertheless is thought about,* and is considered by at least some philosophers *to be implied by imperfectly just acts.* In answer to this question one may search for evidence, *and inquire, if, e.g., the perfect, the geometrical circle, ceases to be an entity because no physical* *object ever attains its perfection?* Indeed, does not the very imperfection of such physical objects imply *the perfect,* as the *limit* of the approximations? And would the perfect circle cease to *be,* if all physical objects were annihilated? Then does *ideal justice,* as a standard for men to attain to, if possible, become less of a fact, because society and poor frail human beings and their concrete acts fall short of this ideal? Would *it cease to be,* should a cataclysm hurtle all human beings forever into non-existence? And *was it a non-fact* in those far reaches of past time when to living nature the glow of dawning humanity had not yet come?

The answer to these inquiries is almost as old as man's own philosophizing, and is one that unites modern Realism with ancient Idealism. It is, that *ideals are real.* Plato was and still remains the great spokesman.[3] *Eternal* are justice and goodness and truth, *not* because they persist through all time, but because "in a heaven by themselves" they partake neither of the nature of *"things"* that are *in* time and space, nor, indeed, of the nature of time and space themselves. Time- and space-conditioned things—"existents" we call them—*approximate* to the ideal in various degrees, but never attain it. Thus are the leaf, the circle of waves from the pebble, and the wheel that man makes for his use, *all* after the model of the perfect circle, yet are all lacking its perfection. So also are there *just-like* men *and* acts *and* society, yet do all these fail to attain the ideal. But the ideal remains,—in accordance with the principle, seemingly, that the *limit* is not a member of the series of which it is a limit.

This was the philosophy of Plato—his Idealism and his Realism,—and, also, is it modern Realism, with *its reality of ideals and its ideal reals.* Justice, truth, goodness, and beauty are "eternal verities"—entities not subject to the stresses and strains that distort the particular and concrete time- and perhaps also space-conditioned products of *natural* processes. Indeed, did the act or the person become *wholly just,* and were there only genuine knowledge and no error, still would *these* "concretes" and "particulars" be *numerically distinct* from

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[3] In, *e.g.*, Plato's *Republic, The Theætetus, Parmenides, Phædo,* and *Cratylus.*

perfect justice and from *complete truth.* The perfect circle is *independent of* and *numerically distinct from* the particular imperfect instances in nature, but the independence and the distinctness are between the ideal, or principle, on the one hand, *and* the particular existents, on the other hand. Did the latter attain to the ideal, then would the independence and distinctness still be a fact. And the case is not different with justice and the just act, and with truth and concrete knowing.

One question, then, that contributes to the cosmology of values is answered. Among values, as among non-values, there are *both existents and subsistents,* with the former subject to time and space conditions, and the latter not.[3]

But there is a second important question, the solution to which further extends our cosmology. This may be advantageously discussed by considering the nature of beauty in the particular instance of the beauty of color, of light and shade, and of outline, of the sea and islands now before me. Old and traditional, now, is the doctrine, that in the *physical* world there are ether waves, chemical pigments and substances, reflecting surfaces, lengths, heights, distances, and form, *but that the color of an object is subjective,* or that its *esse* in any particular instance is its *percipi,* even as in traditional logic and psychology the *esse* of a universal is held to be its *concipi.* It is likewise with *beauty.* For difficult is it, indeed, to find physicist or psychologist who does not insist that beauty in any particular instance is *dependent on him who perceives and appreciates,* and who does not also interpret this *dependence* to mean, that the *beauty somehow resides in the perceiving and appreciating subject.* For does not, *e.g.,* the *color,* according to the traditional view, there reside? And is not the color identical with one element *in* the beauty of the landscape?

However, the traditional interpretation *confuses* two things that are *distinct.* "To be dependent on" is not "to be identical with." Thus, *e.g.,* physical motion, whether uniform or accelerated, depends on both time and space, yet is not identical with these, but is, rather, a variable that is *correlated* with both time and space, and that may, therefore, be *qualitatively different* from and so not *causally related* to these entities.[4] So, also, is that complex functioning of the human organism which is called its "living" *dependent* upon many organs, structures, and specific processes, but is not identical with any one of these. In both motion and organism there is *organization,* by specific relations, of those parts that enter into the whole, while the whole is specifically different, qualitatively, from its parts, and belongs to a different realm of discourse. Thus, *e.g.,* the atom differs from the electrons that compose it, the molecule from its constituent atoms, the cell from its molecules and colloidal particles, and, finally, society from the human individuals that are its units. Indeed, no realm of fact, whether subsistent or existent, is exempt from this principle of *creative synthesis,* in accordance with which one or more specific organizing relations so relate parts that there are new qualities in the resulting whole, and whole and part belong to specifically different universes of discourse.[5]

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[3] See Chap. XLIV., II.

[4] See Chap. XLIII.

The realm of values is *no exception* to the validity or application of *this principle.* The physiological organism, either as a whole, or in respect to certain of its parts, such as eye, optic nerve, and occipital lobe, itself enters as *a part* into still other "larger" complexes that are wholes because of the presence of one or more organizing relations. And *this larger whole,* like other wholes, has characteristics that are different from those of its constituent parts. Accordingly, it may well be, that, just as water is composed of hydrogen and oxygen, yet *is* neither of these by themselves, but only *as they are related and organized* to form a whole, *so also* are, *e.g.,* the color and beauty of particular physical objects not identical either with the physiological organism or with any part of it, *nor* with the physical entities themselves, *but are properties of that whole which* is *an organized whole of organism and physical entities.*

This means, of course, that color and beauty are *dependent in just this specific way* on a perceiving and sensitive organism, but it does not mean that they are *resident in* the organism, or that their *esse* is their *percipi* by a substance- and receptacle-like consciousness, as the traditional theory maintains. Indeed, we can go one step further in this argument concerning the typical case of the color and beauty of particular physical objects, and raise the question: Granted our principle of creative synthesis, that wholes have qualities which are different from those of the constituent parts, and granted also the usual physical view, that ether waves and chemical pigments are external to and independent of the sensitive organism, *then* may not the color and the beauty *as such* be qualities of *the organized whole,* ether waves *and* pigments, and so be quite external to and independent of the organism?

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[5] Cf. Chap. XLIII., v.

This question is difficult to answer with assurance, but an affirmative reply is not weakened by the opposing argument, that to the person who, *e.g.,* is color blind to red and green, these colors are indistinguishable and lack their specific qualitative character. For the facts of color vision not only are quite compatible with, but also they tend to confirm, the hypothesis just advanced.

Color blindness is commonly held to be due to the lack of a specific photo-chemical process in the retina. Given the three normal photo-chemical, physiological processes in the retina *and* the other normal conditions, and there *are* perceptions of red *and* green, blue *and* yellow, black *and* white, but if one of the first two processes is lacking, there is a specific color-blindness. In both instances, therefore, the *color* is *partially dependent* on specific chemical processes in the retina. But, if color is thus conditioned *in the eye,* may it not also be *a fact* both outside and independent of the eye *and* the organism, *when conditions similar to those in the eye are given?* The camera, placed in the proper position, shows that the convergence of the parallel rails does not have its *esse* either in the organism or in consciousness. Does not color photography, then, reveal an analogous *objectivity* for color—and for *beauty?*

This argument that at least certain values are objective in the sense that they are *numerically distinct* from and independent of *both* a perceiving consciousness and a receptive organism is, perhaps, a radical departure from traditional views, and it may frankly be granted to have its weaknesses. But if it is correct, we must conclude, that those elements which are *æsthetic ultimates are,* together with the wholes that result from them, *quite as objective* as are any of the entities in a strictly non-value field. This means that symmetry and proportion, Hogarthian "lines of beauty," color and color combinations, simple ratios among fundamental tones and over-tones and the like, are æsthetic ultimates that are not dependent either upon a changing and developing consciousness, or upon tradition and fashion, although their *recognition* may be thus dependent.

This conclusion receives support from that accumulation of evidence which makes for the correctness of a general realistic position, namely, that position which holds to the objectivity not only of normal and abnormal *existent* objects, but also of standards and ideals, and, indeed, of *all* those entities that are discovered by reason. It is a position, however, that is *not* exclusive of that "subjectivity" of *taste* and *preference* which *must* be granted in view of the great *diversity* of tastes, of fashions, of "schools," and of conventions. There is evidence to show that the presence of a sensitive and reacting organism is *not* necessary to the existence either of æsthetic elements or of æsthetic complexes. But, on the other hand, the organism *does* enter into the *complex whole that exists when an æsthetic object is perceived and appreciated.* It is one participant in a complex, even as there are other participants. *Vary it,* and the resulting properties of the organized complex vary, even as the perceived color varies from the normal in the case of a color blind eye.

One cannot deny, therefore, the reality of the appeal of the beauty of an object to that person with whom we do *not* agree. His organism and his organization may not be wholly like ours. So also may there be sex, national, and racial differences, of which some are induced by the development of a tradition which forms an environment to him who is born in it. Thus may we account for the fact that the Japanese do not approve of European drawing and painting, and that most of us have to grow to like the ever new fashions and modes in music, sculpture, painting, decoration, and dress. Or, it may be, that the realm of the objectively pleasing and beautiful contains such *a wealth of material,* even as does the realm of scientific entities, that *only a selective process* can be directed toward it, and that the basis for this selection is laid down by education, imitation, and tradition. But in either case, just as there is a range of distribution of physiological organizations, with the most similar ones the most frequent, and the deviations rare, so also will there be *norms* of taste and of appeal, with the deviations exceptional, but no less real and well-grounded than the normal.

However, it is not our purpose to present an exhaustive discussion of the problem of values. Therefore we shall omit the question as to what the *total range of values* is, and, also, we need not make any final definition of these entities. Our purpose will be accomplished if we keep to that safe ground where we find *certain specific values very generally recognized and accepted.* Thus, without raising and endeavoring to answer the question, whether there are values *wherever there are desires,* or interests, or tendencies, we will next consider the *moral situation* as we find this among human beings.

This specific problem is selected because of its bearing on other, perhaps greater problems, solutions to which must be given in order to make our realistic philosophy at all complete. For in this philosophy we must finally consider the great problems of *teleology and theology.*

The field of morals is very generally admitted to coincide with that realm in which there are human beings or personalities as *they* stand in various relationships not only to one another, but also to other living creatures, and even to all nature and to the universe itself. In contrast, space and time, atoms and molecules, cells and organs, and even all living beings other than man, would seem both in their relationships to one another and to man himself to belong to a realm that is distinctly nonmoral. Men may recognize that in their relationship to some of these things, notably to "dumb animals," there is a moral situation; but morality does not seem to concern these entities by themselves or in their converse relationships to man. Here there is neither morality nor its opposite.

The moral situation seems, therefore, to occur only under *specific conditions.* It is a specifically differentiated universe of discourse, *different* from other realms, such as the chemical and the physical, but *not contradicted* by them. What, now, is the "topography" of this realm, and what are the conditions under which it exists?

Certain principles previously ascertained again come to our assistance in answering these inquiries. First, there is the principle of *creative synthesis;* parts form wholes which manifest, or *are* one or more qualities that are different from those of the parts. Secondly, there is the principle of *freedom;* new qualities are *a law unto themselves;* they act in accordance with their own nature and are free to do this, in that they are specifically different from the qualities of the parts. Finally, there is the principle, that *one and the same entity can stand in several relations, and that these relations are not constitutive of one another.* In other words, an entity can be a term that retains its identity while it is a member of a number of relational complexes; in one relation it may act as a unit and constituent that, *together* with other units, forms a larger whole, while in other relations it may itself be a resulting whole *and a complex.*

The application of these principles to the question under consideration will make these statements clearer, and will connect our present discussion with the previous constructive development of our realistic cosmology. Again it will be shown that *ethics is not a phase of biology,* even as biology is *not mere* chemistry and physics, and *these are not mere* sciences of space and time and number.

A molecule is a complex of atoms, even as atoms are in turn complexes of electrons; but a molecule has properties not found among those of the atom, and *acts in accordance with these* properties, though *compatibly,* also, with those of its parts; yet in so acting, *it acts as a unit.* Thus, to illustrate, molecules of sugar *in solution* go *as wholes, i.e., as units,* through certain membranes; but such molecules are related both to *their* parts *and* to other molecules; in the one relationship they are *complex wholes,* in the other relationship, units—*substitutable* by other units (molecules) that are *non-electrolytic,* as the "laws of solutions" show; yet *together* with other molecules of sugar and a solvent, sugar molecules form an aqueous or some other *solution;* but the molecules themselves are *not* a solution, nor do *they* follow the laws of solutions. An analogous state of affairs holds (1) of the cell in its several relationships to its parts and to other cells; (2) of an organ, like the heart, in its relationships to its parts and to other organs; and finally, (3) of the complete and mature organism in its relationships both to *its* various organs *and* to other organisms.

Man, as a human organism, is no exception to these principles. Complex, indeed "infinitely complex" though this organism may be, nevertheless, in certain relationships, it acts as a *unit, and is a constituent of a larger whole.* One such whole is society—the society of human individuals—and this whole possesses characteristics that the units do not have, *morality being one such characteristic.* If this is to say, that there would be no existential moral act or motive or person, were there *only one* human being in the world, then let this be said. The situation in which *morality* thus occurs may be and undoubtedly is a very specific situation, but, *once it has appeared,* then, as presenting *something new,* there is *freedom in respect to this very "newness."* However, this is *not* a freedom of the individual in the sense of his *lawlessness,* nor in the sense that it goes counter to the laws, physiological, chemical, physical, geometrical, and mathematical, of *those* parts of which he is a resultant whole. It is the freedom, rather, of the whole to act in accordance with the nature of those characteristics which *it manifests as a whole,* which *particularize* it as a whole, and which distinguish it from its own parts, from other *coördinate* wholes, *and* from complexes of which *it* itself may be a part. The human individual is, now, in quite this sense, *free in respect to his peculiar characteristics as a human organism, i.e.,* he is free in respect to his mode of reaction to his environment, as this is physical, mental, historical, existent, and subsistent. The "taking place" of *some* of these modes of reaction *is* consciousness. Such modes of reaction do not contradict physical and chemical facts and laws, but are *more than* these, and in this sense are free. But it is only when the human individual *reacts in a very specific way,* namely, when the *personality* of other individuals, and accordingly their desires, motives, rights, and ideals, are in his field of consciousness, and his in theirs, *that the moral situation subsists and exists.*

The individual is thus free in his cognitive consciousness, but it is society alone that is *free morally* in the sense above defined. With but one individual in the world, there would still be the former, but not the latter freedom. But since it is a fact that there *are* many individuals, there *are* both kinds of freedom, yet only because, over and above the conditions for the existence of the consciousness, there are *also* the specific conditions for the moral situation.

This situation is, then, a characteristic of that whole, *society*, which includes, let us say, *all* human beings, and which may perhaps be so extended as to include other organisms, and even *inorganic* nature. Its *antecedent* basis is the cognitive (conscious) situation, but it itself is *not identical with this*. For the moral situation arises only when, within this broader relation, a very *specific* cognitive consciousness appears, namely, that which is the recognition of *personality* as such. But, with this recognition once present, then, as constituents of this specific consciousness, there arises, further, the cognitive consciousness of *respect*, of *reverence*, of *rights*, and of "*ought*." *This*, therefore, is *the moral consciousness*,—of society—conditioned by the existence of society, self-legislating and thus free, non-existent in an individual by himself, but binding upon him as a member of the complex, and, once arisen, forming part of his own cognitively conscious field.

With this *state of affairs* holding of moral phenomena and their antecedents, and with analogous situations occurring elsewhere, there is now revealed both the necessity of *an inductive procedure* in studying each higher level of realities, *and* the impossibility of *reducing* the higher to the lower, as well as of deducing the former from the latter. Empirical entrance must be made at each level to discover its characteristics. But, once discovered and analyzed, the characteristics of any level can in *many* instances be *correlated functionally*, though not causally, *with those of lower levels*, and *in every instance the compatibility* of higher with lower levels must exist or subsist. For, although different, still, distinct levels are *consistent*, belonging to different universes of discourse, and existing or subsisting side by side. Accordingly both the moral *and* the cognitive consciousness are *facts* side by side with the *facts* of biology, but the laws of the latter are *not* those of the former. Thereby, however, the practical necessity of discovering and analyzing the *principles of morals* on their own basis and level, and the impossibility of deriving these from and reducing these to the laws of biology, chemistry, physics, and mechanics, is shown to be due, *not* to our ignorance, but to the very *structure of reality itself*. It is in this way, then, that our philosophy of moral values takes its place in the larger whole of our realistic cosmology.[*]

CHAPTER XLVI

REALISM'S TELEOLOGY AND THEOLOGY

In our preceding discussion the conclusions have been reached (1) that values both exist and subsist, as illustrated respectively by just acts and by justice; (2) that values are real parts of the *objective* world, external to and independent of not only their being perceived, conceived, and appreciated, but also of the physiological organism; and (3) that certain values, such as morality, subsist and exist *only* in certain situations, as characteristics of wholes that are complex in respect to their parts, but unitary in respect to other relationships. Our position here, as elsewhere, is, therefore, one that stands in radical opposition to that relativism and evolutionism which receives the name of Pragmatism, and yet it is one that denies, not the fact of change and evolution, but only their universality. For there is undeniably an existential evolutionary *process*, and in this process *just* acts, motives, and persons appear and disappear, as do also beautiful "things" and qualities. But justice and beauty and truth themselves do not change, but remain eternal, quite outside of time and space.

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[*] The theory of æsthetic and moral values just presented is one that departs widely from the positions that are taken by most writers. A brief general bibliography is herewith given, but without reference either to the agreement or the disagreement with the views above presented.

For æsthetic values: Aristotle, *Poetica;* I. Babbitt, *The New Laokoon,* 1910; B. Croce, *Æsthetic as Science of Expression,* trans. by Ainslie, 1909; Gross, *Einleitung in die Aesthetik;* Guyau, *Les Problems de Esthétique;* Hirn, *The Origins of Art;* Kant, *Critique of Judgment;* Lessing, *Laokoon;* Lipps, *Spatial Æsthetics and Optical Illusions;* Vernon Lee and C. Thompson, *Beauty and Ugliness;* H. R. Marshall, *Æsthetic Principles,* 1901, also *Pain, Pleasure, and Æsthetics;* E. D. Puffer, *Psychology of Beauty;* Santayana, *The Sense of Beauty;* Tolstoi, *What is Art?* Woodberry, *The Heart of Man.*

For ethical values: Am. Phil. Assoc. discussion at thirteenth annual meeting, *Phil. Review,* Vol. XXIII., No. 2; F. Brentano, *The Origin of the Knowledge of Right and Wrong,* trans. by Hague, 1902; Dewey and Tufts, *Ethics,* 1908; Green, *Prolegomena to Ethics;* Höffding, *Philosophy of Religion,* Kant, *Critique of Practical Reason and Metaphysics of Morals;* Martineau, *Types of Ethical Theory;* G. E. Moore, *The Field of Ethics;* Paulsen, *System of Ethics,* trans. by Thilly; R. B. Perry, *The Moral Economy and Present Philosophical Tendencies,* Chap. XIV.; Rashdall, *The Theory of Good and Evil,* 2 vols., 1907; Sidgwick, *Methods of Ethics;* Spenser, *Principles of Ethics.*

There is, then, a realm of values that is not subject to the stresses and strains of this slowly evolving earth and this starry universe. And such a realm is itself organized, *i.e.*, values stand in definite relations to one another. They may perhaps be well described as subsisting in various *dimensions*, for, on the one hand, they are not reducible to one another, and on the other hand, each would seem to subsist in various *degrees*. This is indicated, perhaps, by the fact that in our ordinary discourse we compare, *e.g.*, any three things of which beauty can be predicated *as beautiful, more beautiful, and most beautiful;* three modes of conduct as just, more just, and most just. This means that, in relation to any two "things," *A* and *B*, that are beautiful or just, there is another, *C*, *between* them, which is of such a character that *the three* subsist in the *order A, C, B;* then, also, between *A* and *C* there is another degree, *D*, as there is also between *C* and *B*, and so on. One will readily recognize that we have here that which fulfils the logical requirements of a dimension that is at least a *dense* or *compact* series;[1] for the relation of "less beautiful than" or "less just than" is *asymmetrical* and *transitive.*

The realm of values may, perhaps, be organized also in other ways, as, *e.g.*, by relations of similarity and difference, which generate *classes* in the well known order of *genus* and *species.* But it is not our purpose to become involved in the perplexing intricacies of the question as to what such a classification or classifications may be, since such a problem may better be left to a detailed treatise on values.[2] Our purpose is, rather, at this point to consider existential values, and to inquire if there is anything contained in them or in the situations in which they occur that throws light upon *the teleological problem.*[3]

[1] Cf. Chap. XLIII., VII., VIII., IX.; also A. P. Brogan in Proceedings of Am. Phil. Assoc., *Phil. Review*, Vol. XXIV., No. 2.

[2] See bibliography at end of preceding chapter.

[3] See Chap. VII.

Such an inquiry leads at least to results that are positive, and to a fairly precise specification of the sense in which there *is teleology in the existential process* of the universe. For, that it is *a process* in which stars and planets, earth crust and earth depths, rocks and rills, plants and animals, nay even elements and atoms participate, *is a fact* of general scientific acceptance, albeit *science also shows* quite as decisively that there are *certain "things"* which are *not processes,* and do *not evolve.* Space and time, numbers, logical principles, and even *the principles of change* themselves are examples of such exceptions. Further, it is good realistic philosophy to accept this scientific position *without its further transformation,*[4] although this does not mean that the implications of scientific results are not, if possible, to be discovered, and that, in many instances, to do this is the special task of the philosopher.

If, now, process is change, then, whether it is *evolution* or *not* (for evolution *may* imply *progress* toward a goal), it is at least *direction* in the *logical* sense of this term.[5] For change, whether it be change of position (motion) or of quality, and whether it be continuous, dense, or discontinuous, both *presupposes* and is *correlated with time.* But *time* is a series of instants related asymmetrically and transitively, and in this sense has, or *is direction.* Whether, now, the "world process" be motion or qualitative change, or *both,* and, also, whether it be *one* or *many* processes, *it has direction because of its correlation with time.* In other words, the process "goes" one way, and one way only, and is, in this sense, *irreversible.*

However, not only has the world process direction in this sense, but there is also empirical evidence to show that the physical universe has or *is* direction in still another manner. There is evidence that the physical universe is "running down." Seemingly its end (do we here get teleology if *τέλος* means end?) is to become *wholly* "run down," and *then, no more process!* The empirical facts in this connection are frequently referred to in philosophical writings these days, and are used to support all sorts of conclusions, which oftentimes they do not really support.[6] Here these facts need only brief mention.[7]

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[4] See Chaps. IV. and XXVIII.

[5] Cf. Chaps. II., and XLIII., VII.-IX.

The greater number of physical processes or energy transformations throughout the whole universe are *exothermic, i.e.,* they give off heat. Scientifically this means that, side by side with other energy transformations, as, *e.g.,* that of kinetic energy into electrical energy, there is *always* a transformation into heat energy. But heat energy, like other energy forms, is the product of two factors, namely, an *extensity* and an *intensity* or potential. In the case of heat energy these factors are, respectively, *specific heat* and *temperature,* while in electricity they are those factors that are measured in *coulombs* and *volts* respectively, and in a gas or vapor, *e.g.,* steam, they are *volume* and *pressure.* The latter case is illuminative of the principles which we wish to make clear.

The piston-head in the cylinder of a steam engine is forced back and forth only on condition that there is *a difference of potential, i.e.,* of pressure on its two sides, and such pressure *varies directly* with variations in the temperature, provided the volume is constant. The pressure is a *function* of the temperature. From this and similar instances, of which there are many, the generalization is made, as identical in part with "the second law" of energy (the first law being that of *conservation*), that the condition for the occurrence of an event is *a difference of potential that is uncompensated* by "anything" else. Were there not such *uncompensated potential differences,* then nothing could *occur.*[8] There would be *no events, no processes* at all, but everything would be at a standstill—at least everything in the physical universe.

But it *is* to *just such a standstill* that our physical universe is tending. For all other energy transformations are accompanied by the production of heat, and heat is an energy that cannot be *confined* within limits; it spreads out, and, as it does this, tends to become of a uniform temperature or potential, which is the very condition that is *inhibitive of process and event.*

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[6] For example, Bergson's use of these facts in *Creative Evolution.*

[7] The best general presentation of these matters is by Soddy, *Matter and Energy,* in The Home University Library Series.

[8] See Helm, *Die Energetik.*

The crucial fact here is the impossibility of confining the heat. In order to confine heat perfect non-conductors would be necessary, but these are not to be found. Were they accessible, then a means of control, a means of *coördinating* the heat extensities and the temperatures, and so of directing the heat energy, would be available. Indeed, if a similar control of other energies were also at hand, then would the construction of a perpetual motion machine be quite possible. However, as "things" actually stand, no such means of control are at our disposal, and the *unavailability of the greater part of all energy* is accepted as *a firmly established conclusion* in the physical sciences. *Taken together with the correlation of all change with time,* this great empirical fact of the "running down of the physical universe" is empirical evidence that it has *direction,* although such a conclusion is weakened by recent discoveries of radio-active substances, and, perhaps also, by the "theory of relativity."

Shall we, now, *identify* this *empirically established direction* with teleology? If we do, we should remind ourselves, however, that such direction of itself implies *no growth in complexity,* no higher organisms developing out of lower ones, *no purpose* in any usual sense of this term, *no advance* and *no progress* in that sense in which *we like* to think these, but only a mere asymmetry and "transitivity" of change, a swing ever forward and never backward, an ever continued expenditure with no recovery.[9] Indeed, even if we endeavor to interpret this *directional* phase of change by the concepts, "means" and "end," we get but a *paraphrase* of our original facts, and are no better satisfied than before. For both means and end are then but *members of a series,* with the means *as earlier* asymmetrically related to the end *as later.*

We must conclude, therefore, that the *identification* of the teleology of the existential process with its temporal direction and its "running down" is *not* a very satisfactory solution of the teleological problem. Better perhaps deny teleology altogether, than take the heart out of it by an explanation which shows that, even if we identify *evolution* with *such phases of change,* there is naught of advance, of progress, of betterment, in any appealing human sense.

[9] Cf. Bergson's conclusions, quite opposed to this, in *Creative Evolution.*

Fortunately, however, empirical facts forbid our making any such identification, or, better, limitation. The physical world-process *is* direction in the sense just presented, though its correlation with time is a more firmly established fact than is its "running down." But the world-process is also *more* than direction in either of these two senses. For if we identify change with evolution we can show empirically that all evolution is marked by *the production of something new.*[10] *New wholes,* and, among these, *values* arise that did not exist before; progress and betterment take place in just this sense.

So far as logic is concerned, change might be *limited* to motion, and then there might be no qualitative advance, no appearance of values, and certainly no increase in values. But it is an empirical fact, that within the universe there are qualities and *qualitative changes.* These changes are, frequently, at least, *in correlation* with motion, as they are *invariably,* also, with time, and perhaps, also, with space; *but they are not identical with motion, any more than is that change of motion's velocity which is acceleration.* There are *also entities* in the universe that are *not change,* and that are qualitatively different from one another. Numbers, space and time, and other subsistents, as, *e.g.,* subsistent values, are among such entities. The physical universe would also seem to contain entities that do not change or evolve. Thus at the present time electrons are regarded as playing this rôle. But, also, as we have seen, there are organizing relations of various types and in innumerable specific instances. Accordingly there is *an existential creative synthesis* that is *also* a temporal process in which there arise new wholes with new properties. These properties undeniably have their place in the evolutionary scheme of things.

The general principles that hold for *such a creative process* need not be restated;[11] it suffices at this point to dwell only upon the empirical data at our disposal. Thus, when, in the biological field, we take the evidence at hand and look *backward,* we are convinced that those phenomena and qualities which are presented by, *e.g.,* the protozoa, as the lowest forms of *life,* were *lacking* in those inorganic chemico-physical complexes that existed before life arose. Similarly these protozoa as the

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[10] See Chap. XLIII., IV.-VI.

[11] Chap. XLIII., *ibid.*

progenitors of *multicellular* organisms do not present *all* those characteristics, such as *specific* modes of reaction, of sensitivity, of conduction of stimuli, of sex-reproduction, which *these higher* organisms plainly manifest. Also, as we review the evolution of civilized man, we find that, while our savage ancestors may have evinced, *e.g.*, the altruistic instincts of kindness toward and of sacrifice for the young, and perhaps for still other members of the tribe, they nevertheless did not manifest *that peculiar state of affairs* which *is the moral consciousness* of civilized man. Indeed, if one dispute this, and maintain that there *was* a moral consciousness among early savage peoples, with *a development* only *in degree* and not in kind, from them to us, *then our point can be made* by going still further back, say, to the period of the ape-like ancestors of man, or even to our invertebrate progenitors. *Somewhere* a point is reached on *one side of which the moral situation is lacking, and on the other is present.*

The principle is not different for every quality, characteristic, and situation (and situations are complex entities with definite characteristics) that has appeared in the whole evolutionary process, with the result, that, if this principle is not accepted, it is at the cost of *denying all discontinuous* appearances and *new "things," and* therefore of maintaining that *all* is *one* and *continuous,* with differences only of *degree,* which, *if not apparent,* are at least *potential.* Glorious name, indeed, is this to conjure with, and to *pretend* to knowledge where we are ignorant! But inglorious means is it for denying *the facts* of experience, and the wonderful diversity of the qualitative riches of this universe.

For realism, however, all characteristics, all objects, all situations *and their* qualities, even those that are called illusory and hallucinatory, are *real* in some sense, for, clearly, *within the universe* they must all have their place.[12] Then even more clearly and more strongly, perhaps, do the qualities and situations and complexes that appear in the great evolutionary process of life appeal to our acceptance. Innumerable such entities there are, that at one time are lacking, but that at another time are present, having somehow and somewhere sprung into existence *when before they did not exist.* Yet they all had their *antecedents.* For that *interpretation* of evolution which we are presenting does not in the least deny agency or power, or efficiency, but, on the contrary, emphasizes these entities.[13] Yet *it does deny* the *non-creativeness* of that great process, and therefore also the perfect *continuity* of its career and the eternal oldness and sameness of all that exists. And, accordingly, it denies that evolution is mere direction and correlation either with an asymmetrical time series, or with a "running down," or with both.

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[12] Chap. XLIII., *ibid.*

Evolution is creative. Direct empirical evidence compels us to admit that there is a newness, a creation, an ascent in situations, in complex states of affairs. And some of these situations present, as their characteristics, *entities that are values.* Human history, if one carefully surveys its long succession of chapters, but especially if one compares it with the chapters of organic life that antedated the human, is quite sufficient to convince one of this.

The moral situation has been selected for such considerations both because it is typical and because it is important. But a detailed examination of the data at hand shows that there are also *many other values* that, although now existent, have not always existed.

Here as elsewhere in the evolutionary process, with its ever-appearing new characteristics and qualities, we cannot, therefore, but conclude, that there is *an efficient agent or power to produce all values.* In other words, there is a *power* that "makes for" values, that leads to them, or that produces them.[14] Just which of these terms is best, must be decided by analysis. But the fundamental fact remains, since there *are* values, and these values are produced in the general evolutionary process, *that that which produces or leads to them must for that very reason,* if for no other, *itself be a value.*

This conclusion, however, brings a *new solution* to the teleological problem, and leads us to the very verge of the theological problem,[15] if, indeed, we are not already in its midst. For, of all that we might seem justified to call "ends," it is values, especially moral values, that would seem to make the strongest claim to be so designated. And if a process might seem to deserve the term teleological, for any other reason than that it is direction, it is because of its *creative and accumulative power to produce that which conforms* in some degree at least to the standards of truth, goodness, and beauty. The several facts, (1) that concrete situations among human beings take on some of these value characters in greater or less degree, (2) that, as they do this, the realm of perfect goodness, beauty, and truth seem to be ever more nearly approached, and, finally, (3) that there is *such* an evolutionary process of advance and progress *as to bring about this approach, are together identical with the teleological character of our universe.*

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[13] See Chap. XLIII., II.

[14] Cf. Höffding, *Philosophy of Religion,* for a similar position.

[15] Chap. VIII.

Whether, now, this teleology be interpreted as *"immanent"* or as *"transcendent"* is, perhaps, a relatively unimportant question.[16] The former view has, under the influence of Objective Idealism, become the fashion in most modern philosophical writing, although in traditional philosophy it has been a transcendent teleology that has been more frequently accepted. Such a teleology has usually been identified with some such position as that the existential universe is a *mechanism* which, in the hands of an external Agent or Purposer, is the *means* for the accomplishment of His ends. Clearly this position is based on an analogy[17] with the construction of instruments by human beings, while the "end" that is "aimed at" is interpreted in strictly human, yet more or less vague terms—usually the former.

In contrast to this, the position that has just been previously presented is identical with, in its own specific way, *both a transcendent and an immanent teleology*. It is an *immanent* teleology, since, as regards that great creative evolutionary process, there is no existential agent that is *external* to it as a whole. Its earlier phases are external to its later, and various phases are discontinuous with one another, as they must be in order to have the process genuinely creative, but they are all phases of one total process.

But it is also a *transcendent* teleology. Justice, as we have found, subsists *independently* of just acts, just motives, and just persons.[18] This does not deny, however, the relatedness of justice to these existents, but offers only another instance of the *independence,* accompanying relatedness, of *all* subsistents on existents. Existents, however, are always those particular instances which, under temporal and spatial conditions, the great existential evolutionary process creates. *They* therefore involve the characteristics that the specific subsistent processes, *plus something more,* even as the uniform acceleration of a particular moving particle (assuming that uniform means continuous) involves the order of the number continuum *and something more,*[19] and, also, the motion of the *existent* particle *something more than mere* continuity, *mere* space and time, or *all* of these together. In a similar way, space and time are something more than *number,* although they are each an instance of the same "order system."

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[16] See Chap. VIII.

[17] See Chap. XX.

In *all* these instances, now, the "higher" or *more fundamental* may be said to be both *immanent in,* and also *transcendent to* the "lower" "level." And the case is not different with *justice and other values,* ethical, æsthetic, and cognitive. These are all both transcendent to *and* immanent in their particular existential instances. Accordingly, an evolutionary process that creates these instances presents *an immanent teleology,* while that universe which is *inclusive not only* of this process, *but also* of the realm of subsistents presents *a transcendent teleology.*

But a further question now arises. Are the subsistent values by themselves, in their relations to one another, and in respect to the realm which they constitute, to be denied *agency* or *efficiency?* We must answer "no." The existential process is undeniably an efficient one, for it is one that "produces," "causes," and "brings about." But to *limit efficiency* to existential processes, even though one *does keep causation* and perhaps *"production"* within this field, is quite unjustified. For subsistent entities are such that they *make a difference* to the other entities of the universe, even though they have no causal effect. Thus, *e.g.,* the number continuum, space and time, *condition* other entities, both simple and complex, and in this sense are *active.* So *also is the entire realm of subsistent values an*

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[18] See the preceding chapter.

[19] Chap. XLIII., VII.-X.

efficient one,—an efficiency which would seem to be confirmed by the fact that human beings are *actuated by ideals that have never yet received concrete existential form.* For who would be so rash as to maintain, *e.g.,* that any society of men has ever yet attained the ideal of an organization in which perfect justice is rendered to all? Yet who among thinking men denies that this ideal is something to struggle and to strive for? And upon whom does the efficiency of this ideal not fall with compelling force?

The realistic solution of the theological problem can now be stated. Negatively, this solution rejects the pragmatic view, that "God" is but a successful and satisfactory "working scheme," a racially subjective concept become traditional and so almost immediate to *our* consciousness, and yet one that is, after all, only invented as an adaptation to a chaotic environment.[20] Rejected also are the phenomenalistic view, that God is an object of faith, but not of cognition, *and* the objective idealistic view, that God is a psychical being of the nature of will or of intellect, an absolute ego, etc., who is *relater* of all entities, and so the fundamental underlying reality of the universe.[21] Rejected are perhaps other views, also. On the other hand, *positively,* for realism, God is the totality of values, both existent and subsistent, and of those agencies and efficiencies with which these values are identical. He is also at once the multiplicity of these entities and the unity of their organization *in that* they are related. This means that God *is* justice and truth and beauty, both as these are "above" our world and as they are *in* it, and that He is thus both transcendent and immanent. Accordingly, if God is personality, He is also more than personality even as the moral situation among men is more than personality. He is love and affection and goodness, respect and reverence, as these *exist* among and in men, but He is these also as they subsist by themselves, *and act efficiently* upon men. In brief, God is Value, the active, "living" principle of the conservation of values and of their efficiency.

Yet God is not all. There *are* values, but *not all* is value.

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[20] See Chaps. IX., X., XIII., II., XXXIII.

[21] See Chaps. XXIX., and XXXIV.-XXXVIII.

For there are also *"non-value"* entities. But, also, if the universe is that totality of all entities which are facts in some sense, *there* is not only the realm of non-values, such as numbers, space and time, electrons, atoms, masses, molecules, and the like, but there is also the realm of falsity and error, and, especially, of *evil and ugliness,* that is directly opposed to the true, the good, and the beautiful. This problem of evil is *not* an easy one, and hardly any solution of it will meet with wide acceptance. Only a brief analysis of it can be made at this juncture.

Philosophical literature is full of endeavors *to argue evil* out of existence,—indeed, *out of reality,* and it is primarily upon the basis of the positive evidence by which these arguments can be shown to fail, that our own positive conclusion is established.

One such argument leads to that monistic and idealistic conclusion in which *all "things"* are "made" the manifestations and mere appearances of *one* great underlying entity that is usually interpreted as spiritual in character.[22] According to this position all appearances occur as differentiated into pairs of terms that are relative and not merely related to each other.[23] Cause and effect, subject and predicate, up and down, good and evil, are examples. The logical outcome of this position is that *all of these differences disappear in* the Absolute One that underlies them; yet the inconsistent reservation is usually made, that *in the instance of good and evil the latter* alone loses its identity. Thus it is that the urgent attempt is made to *argue* evil out of existence, and out of reality. However, systems of this type have been previously found [24] to fail in many respects, so that we omit the further examination of their endeavor to solve the problem of evil.

Another argument concerning evil claims, however, more serious attention, namely, that argument which is based on the *general doctrine of evolution,* and which accordingly claims that *anything* which is a "means to an end" *that is itself good,* or, indeed, that anything which is even only an incident in the production of good, is *a fortiori* itself a good. This premise is then used to demonstrate that *everything, e.g.,* poverty, is either such a *mediate* or such a final good. For, it is argued, that, *e.g.*, poverty is merely an incident in that universal struggle for existence which is *part of the mechanism for producing the fittest and the best among human beings.* Or, to take another example, that of ugliness, this is *transformed,* if not into beauty, at least into a good and a value. For, it is asked, Is not ugliness *a means in that* it not only *implies* and furnishes *a contrast* with its *opposite,* beauty, but also *causes* us to *appreciate* the latter? And then, finally, there is injustice. Superb rôle it is held to play—namely, not only that of making its opposite, justice, logically possible, as "up" makes "down," but also that of being in *its practice* the royal road to its own gradual elimination and the coming of the opposite ideal, justice. If this argument holds for such typical cases, it holds also for other instances, with the result that there is nothing "under the sun" that is not at least *a good* as a means to some final end which is *itself* either good, or true, or beautiful.

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[22] See Chaps. XXXIV.-XXXVIII.

[23] See Chap. XXXV.

[24] Chaps. XXXIV.-XXXVIII.

The ways by which this argument can be refuted are found both in its own inherent weaknesses, and in directly controverting facts. The weakness of the argument lies in its generalization, that, even though *we cannot understand how* specific instances of seeming evils *are really* goods, nevertheless we must grant *that they are,* and act accordingly. *Appeal is thus made to our ignorance,* and we are asked to convert the proposition, that we do *not know* this or that to be evil, into the proposition, that we *know it not to be* an evil. But, clearly, if we are *ignorant,* then the evidence is neither *pro* nor *con,* and the position, that there are some *irreducible* evils, is quite as justified as is the opposed more optimistic generalization.

However, it is to the acceptance, not of the mere seemingness of evil and ugliness, but of their *actuality,* that the great majority of *good* men direct their practical activities for human betterment. Indeed, if *the fighting of evil* were good *merely because of the fight,* and not because of the evil, then would the fight be *self-defeating.* Practically and actually, however, men fight evil, not for the sake of the fight, but because evil is evil, and because they wish to eliminate it and replace it with good. Not the fight, therefore, nor the evil, but the *fighting evil* is good, and this is so, because evil is evil and good is good.

We must conclude, that evil is an entity that retains its own peculiar character, and that is *not* transformable into, nor reducible to, *positive values.* It is an immediate and self-sufficient entity that, although it is opposed to, is not in the least *dependent* upon, good, although, of course, it is related to good, which is quite possible, since relatedness does not imply dependence, as we have repeatedly discovered.

The general character of our solution of *the theological problem,* as this is based on our solution of the problem of goods and of evils, is sufficiently indicated in these considerations. It is a solution that supports a *theistic,* and not a pantheistic position, and that holds to the *irreducible factuality* of evil and of "powers for evil," as well as of good and of "powers for good."

God is "above" the world of existents, in that He *is* Justice and Goodness and Beauty and Truth as these subsist eternally is a non-temporal and non-spatial realm. This is transcendent Theism. But He is *in* the world even as concrete particular existences conform in a greater or less degree to these ideals. Above the world in this sense, God is *supernatural,* yet this does not mean that He in any sense contradicts nature. For God and nature are each a different universe of discourse, a different realm. But there is also evil, both in a subsistent realm and in existents, and this can neither be argued out of its actuality nor reduced to anything else.

The religious consciousness may accordingly be described as the persistent *conviction* that there *are* these two *powers,* and that each is efficient in the realm of human motives and acts, deeds and accomplishments. Respect and reverence and love for values and worths and for all that either *is* these or that "makes for" them, form part of the religious consciousness. But another part also is the *hatred* and *detestation* of all that is evil and ugly and false, and the desire and *will to fight these.* Such a consciousness is, however, clearly opposed to the passive and inactive philosophical position that evil is but *a means to an end,* or that it is mere *appearance,* so that "God's in His heaven, all's right with the world," but it is, rather, the active, militant attitude of hatred and of combativeness. The passive position is blighting, but *the active* is full of life. Yet evil does not therewith become good—as a means to stimulating the effort for its own annihilation. For it is not the evil, but *the hatred of evil* that is the stimulus. Freedom, too, is given for the fight. For that level of existence at which there is the love of good and the hatred of evil, is one that is the result of a creative process in which new "things" appear that, *as new*, are *free to follow their own nature.*

Such a scheme of life is one neither of resplendent optimism nor of enervating pessimism. Evil is a reality, and deserves only to be fought. But the means are given to do this. For there is a Power for good that works not only side by side with man, but also *in him and through him, flowering in that freedom which is given to his reason to get at truth, to his emotions* to love the beautiful, the good, and the true, and detest the ugly, the evil, and the false, and *to his will and manhood to engage in the struggle.*

INDEX

The Index supplements the Table of Contents, but does not duplicate it: notes, as well as subject-matter, are indexed. The references are to pages, f. signifying "and following page," ff., "and following pages."

Absolute One, The; *see* One, The Absolute.
Absolute Will, 337 f.
Absolutism, 347 ff.; in Phenomenalism, 225; in Pragmatism, 296 ff.
Absurd, the, 132 f.; 143 ff.
Acceleration, 281 ff.; *see* Motion.
Adaptation, 290 ff.
Addition, as an operation, 415 ff.
Affirmation and denial, 147 ff.
Agnostic Monism, 354 f.
All-inclusiveness, of the universe, 432 ff.
Alternative hypotheses, necessity of using, in problem of error, 377 ff.
Analogy; limitations of, 154; use of, 152 ff.
Analysis, 141 ff., 278 ff.; as valid, 27, 396 ff.; and "thing" analyzed, 396 ff.; fact of, as a presupposition, 426 ff.; faulty, 160 ff.; instances of, 382 ff.; view of, in Phenomenalism, 229 f.
Analysis *in situ*, 27 ff., 86 f., 158 ff., 208 ff., 210, 367 ff., 390; method of, as a presupposition, 427.
Anaximenes, 81.
Anselm, 62, 63.
Antecedence; logical, 51 ff., 57; psychological, 51 ff.
Antecedent and consequent, 147 ff.
Anti-intellectualism, 34, 80 f., 274 ff.; as a false position, 400 ff.
Antinomies, 35, 160 ff., 165 ff.
Anti-substance doctrine, the, 273 ff.
Apodictic, 221 ff.
Appearance and reality, 205 ff.; in monistic systems, 346 ff.
Aquinas, 58, 62 f.
Aristotle, 13 f., 62 f., 101, 108, 116, 129, 150, 203, 214, 285; evidence of his use of *the physical thing* as the model for thinking, 30 ff.
Assumptions, the method of making, 390 ff.
Atoms, 387 f.
Augustine, 62 f.
Avenarius, 46.
Awareness, 478; as a dimension, 474 ff.
Bacon, Roger, 89.
Baldwin, M., 448.
Bawden, H., 285.
Beautiful, The, 496 ff.
Beauty, 60.
Beck, J. S., 312.
Behavior, 89 f.
Behaviorism, 477 f.
Bergson, H., 36, 43, 124, 136, 152, 170 ff., 276 ff., 290, 297 f., 303, 342 f., 464, 466, 511.
Berkeley, 58, 62, 108, 181, 185, 214, 233 ff., 325, 327.
Biology, 3, 342 ff.
Bolyai, J., 12.
Bosanquet, B., 109.
Bradley, F. H., 10, 59, 63, 168, 183, 187, 214, 330.
Broad, L. N., 218.
Brogan, A. P., 508.
Brown, H. C., 7, 11 f.
Burnet, J., 166.

Caird, E., 186, 323 f.
Calculus, 281 ff.
Calkins, M. W., 186, 324.
Cassirer, E., 175.
Categories, 13, 17, 107, 222 ff.
Causation, 55, 182 ff., 214 f., 402 ff.; as limited, 292 ff., 448 ff.; as universal, 391 ff.; as universal, in Naturalism, 260 ff.; postulate of, 216 ff.; universal, postulate of, as self-contradictory, 418 f.
Causation-philosophies, 9 f.
Cause, 33, 155 ff.
Causes, 208 ff.; Aristotle's four, 32.
Change, 62, 280 ff.; *see* Motion; correct analysis of, 169 f.; incorrect analysis of, 168 f.; qualitative, analysis of, 464 ff.
Chaos, 54 ff., 331.
Chemical entities, 444 ff.
Classes, 16, 34, 91, 112 ff., 188 ff.; contradictory, 415 ff.; definition of, 193.
Classification, nature of, 15.
Class of classes, 361.
Coffee, P., as a modern scholastic

showing the character of the Aristotelian tradition, 31.
Collections, 192 f.
Compact, defined, 194.
Complexes; relational, 101 ff., 112 ff., 178 ff., 183 ff., 281 ff., 293 ff., 275 ff., 375 ff., 421 ff., 472 ff.; specific, as organized wholes, 194 f.
Comte, 46 f.
Concepts, 113 f.; nature of, 188 ff.
Connections, knowledge of, 145 ff.
Connotation, 113 f.
Consciousness; as an *end* causal effect, 483 ff.; as a relation, 481 ff.; as a non-spatial, non-temporal, qualitatively distinct variable, 470 ff., 484 ff.; as a substance, 439 ff.; as a substance, implications of theory of, 374 ff.; as useful, 287 f.; continuity of, in evolution, 337 ff.; dimensional and relational theory of, bibliography of, 470; problem of the nature of, 89 ff.; problem of the nature of, solution in Phenomenalism, 229 f.; problem of the first kind of, 91 ff.; problem of, and problem of error, 438 ff.; relational view of, 42 f.; substance view of, as making genuine knowing impossible, 42; the religious, 520 f.; undeniable fact of, 486 ff.
Conscious processes, classification of, 97 f.
Conservation; of energy, 90 f., 257 ff., 262 ff.; of values, 509 ff.; principle of, in general, 257 ff.
Consistency, 6 ff., 135; as a presupposition, 418 ff.; as distinct from implication, 419 ff.; definition of, 421.
"Consistents," definition of, 490.
Continuity, 57, 161 ff., 165 ff.; analysis of, 451 ff.; and experiment, 462; definition of, 194, 461.
Continuous series, examples of, 462.
Continuum, linear, 461.
Contradiction, 161 ff., 278 ff.; Being of, as a presupposition, 414 ff.; fundamental, in Phenomenalism, 227 ff.; fundamental, in Pragmatism, 300 ff.; in systems opposed to Realism, 230 ff.; ~~in Objective~~ Idealism, 331 ff.; in proof of Absolute One, 357 ff.; law of, 106 f., 136 ff.; principle of, use of, 285, 318 ff.; principle of, formal use of, 186 ff.; self-, 6 ff., 136 ff.
Contradictories, 141 ff., 149 f.
Contradictory, The, 17.
Contradictory attributes, their subsistence in different *loci*, 375 ff.
Contradictory propositions, 136 ff.
Contradictory terms, 136 ff.
Contraries, 149 f., 161 ff.
Converse, 115; of a relation, 101.
Correctness, formal, of reasoning process, 119 f.
Correlation, 171 ff., 449 f.; of series, 23; not identical with identity, 381 f., 477 ff.
Correspondence, 290 ff., 448 f.
Cosmological argument, 63.
Cosmological problem, solution of, in Phenomenalism, 286 f.
Cosmology, of monistic systems, 345 ff.; of Subjective Idealism, 239.
Cosmos, 54 ff., 58 ff.; the, 437 ff.; the, for Realism, 443 ff.; logical origin of, for Objective Idealism, 331 ff.
Costello, H. T., 158.
Counting, in relation to number, 150 f.
Creative synthesis, and values, 500 ff.
Creighton, J. E., 109.
"Cuts," 458 ff.

Darwin, 285 ff.
Deduction, 16.
Deism, 58 ff.
Deity, The, 54 ff., 58 ff., 66 f., 187 ff., 233 ff., 328 ff., 517 ff.; in monistic systems, 346 ff.; in Naturalism, 260; in Phenomenalism, 225.
Democritus, 262.
Denial, *see* Presupposition.
Denotation, 113 f.
Density; analysis of, 451 ff.; definition of, 194; postulate of, 461.
Denumerable, definition of, 461.
Descartes, 46, 58, 108, 129, 204, 214, 264 f.
Design, 62 ff.
Determinism, 338.
De Vries, H., 287.
Dewey, J., 73, 110, 283 ff., 293, 297.
Dictum de omni et nullo, 116.
Dimensions; and elements, 471 ff.; definition of, 471; non-spatial and non-temporal, 472 ff.; within the universe, 471 ff.

Direction, logical, 194; of processes, 509 ff.
Discontinuity, 161 ff.; analysis of, 451 ff.; definition of, 194, 462; in evolution, 513 ff.
Discourse, universe of, 175.
Discovery, 24, 27; and Realism, 438 ff.
Disjunction, 141 ff.
Distance, 145 f.
Distinctness; numerical, 498; of truth and certainty, as a presupposition, 424 f.; not identical with discontinuity, 464.
Distribution, 117.
Dream-objects, nature of, 92 ff.
Driesch, H., 343.
Dynamic view, the, of modern science, 336 ff.

Efficiencies; non-causal, 442 ff., 451; non-existential, 479 ff., 516 ff.
Ego, the, 325 ff.; as a substance, 33 f.; Absolute, *see* Absolute One.
Ego-centric predicament, 219 ff., 322; as solved in Phenomenalism, 228 f.; as solved in presuppositions of Subjectivism, 240 f.; solution of, 208 ff., 212 ff., 365 ff; *see* Predicament.
Electrons, 287 f.
"Elements"; in Positivism, 244 ff.; psychical, 389 f.
Elimination, virtual, 27 ff., 207 ff.
Elliott, H. S. R., 171.
Emotional experience, 124 f.
Emotionalism, 276 ff.
Empedocles, 51.
Endlessness, analysis of, 451 ff.
Energy, 262 ff.; conservation of, 510 ff.; as Will, 338 f.
Entelechy, 343.
Entities; of the universe, classification of, 486 ff., 494; types of, examples of, 488.
Epistemological problem, 203 ff., 430; other problems as independent of, 53; solution of, in monistic systems, 349.
Epistemology; its dominance in modern philosophy, 25; science as independent of, 25.
Erdmann, B., 121.
Error; definition of, 295; nature of, 293 ff.; possibility of, as a pre supposition, 429; the residual element in, 376 ff.; problem of, and problem of consciousness, 438 ff.; problem of, bibliography of, 439; problem of, in Pragmatism, 290 ff.; problem of, in Phenomenalism, 228 f.
Error-objects, as part of the cosmos, 378, 433 ff.; as subsistents, 377.
Ethical Idealism, 330 f., 333 f.
Ethical Monism, 341.
Ethics, *see* Values.
Ethics; in Phenomenalism, 225; not a branch of biology, 450 f.
Eucken, R., 43, 342 f.
Euclid, 6, 129.
Evil, 61; as an entity, 518 ff.; as appearance, 339; problem of, 204 ff., 518 ff.
Evolution, 90 f., 111, 257 ff., 262 ff., 280 ff., 283 ff., 305 ff., 335 ff., 509; concept of, in modern Individualism, 402 ff.; logical necessity of, as demonstrable, 186 f., 285, 340 f.; *see* Motion.
Evolutionism, degrees of, in Pragmatism, 295 ff.
Excluded Middle, law of, 107.
Exclusion, 137 ff., 142 ff., 375 ff., 441 ff.; contradiction as, 417 ff.
Existents, 148, 244 ff., 294f., 305 f., 388 ff.; definition of, 490; kinds of, 491 ff.
Ex nihilo, Principle of, 264 f.
Experience, 73 f.; and experiencing, 81 ff.
Explanation, 381 f.
External relatedness of *knowing* and *known*, as a presupposition, 428.
External relations, 313 ff.

Fact; definition of, in Phenomenalism, 227 f.; how given, 123 ff.; nature of, 71 ff.
Fechner, 59.
Fichte, 10, 62 f., 108, 186, 312, 317 ff., 322, 325, 330, 333, 341.
Finite, definition of, 194, 463.
Finiteness, analysis of, 451 ff.
Force, origin of the idea of, 336.
Fractions; irrational, 456 ff.; rational, 456 ff.
Freedom, 56, 333 f., 521, 505 f.; definition of, 449; of new qualities, 448 ff.; not identical with lawlessness, 392 f.; of the will, 394 f.; to postulate, 7 ff.
Frost, E. P., 89.
Functions, 39 f., 185.

Functional relations, 27; between "levels," 506 f.
Functional whole, definition of, 195.

Galileo, 88, 121 f., 156.
Gaps, 165 ff.
Generalization, 126 ff.
Geometry, 18; as illustrating types of wholes, 196 f.; different systems of, 146 f., 419 ff.; modern method in, 5 ff.
Geulinx, 63.
Good, Absolute, 347; The, 496 ff.
Grammar, 99.
Greek Philosophy, 46 f.
Green, T. H., 186, 322 f., 331.

Haeckel, 262.
Hegel, 10, 47, 59, 62 f., 108, 186, 285 f., 313, 318 ff., 322, 328, 330, 341.
Helm, G., 510.
Herbart, 60.
Hibben, J. G., 42, 58, 159, 206.
Historico-pragmatic proof, 64.
History, definition of, 3 ff.
Hobbes, 262.
Höffding, H., 43, 58, 61, 514.
Holt, E. B., 81, 89, 177, 492.
Humanism, 298 ff.
Humanists, 54 ff.
Hume, 108, 181, 214.
Huntington, E. V., 12, 175, 455, 461, 471, 472, 480.
Husserl, E., 12, 103, 107.
Huxley, 246.

Idealism, 48 f., 84, 88; Ethical, 333 ff.; Objective, 9, 214 f., 272; Platonic, 308 ff.; Subjective, 9 f., 92 f.
Idealists, 72 ff.
Ideals, 11, 151 f., 309 ff., 394 f.
Identity, The principle of, 105 ff.
Illusions, problem of, solution of, 92 ff., 374 ff.
Illusory objects, 93 f.
Imagination, 126 f.; in art, 127 f.; in philosophy, 128; in science, 127 f.
Immediatism, 276 f.
Immensity, 49.
Implication, 7, 16, 18, 86, 99 ff., 114 ff., 155 ff., 196 ff., 391 ff., 409 ff.; absence of, instances of, 413 f.; basis of the relation of, 100 ff.; Being of, as a presupposition, 412 ff.; limitations of, 422 ff.; presence of, and instances of, 413 f.
Implications, development of, 145 ff.
Implicative situation, the, 103 ff.
Inclusion, complete, partial, or negative, relation of, 102.
Inconceivability of the opposite, 8, 130 ff., 221, 368.
Inconceivable opposites, examples of, 130 f.
Independence, 182 ff., 332; and relatedness, 20 ff., 24 ff., 41 ff., 76 ff., 82 f., 174 ff., 178 ff., 207 ff., 382 ff., 465 ff.; and relatedness, instances of, 84 ff.
Individualism, 77 ff., 402 ff.; bibliography of, 403.
Individuality, 107.
Individuals, 16 f., 112 ff., 445 f.
Induction, 121 ff.; necessity of, 292 f., 449.
Inference, its logical conditions, 99 ff.
Infinity, 159 f.; analysis of, 451 f.; compatible with finitude, 164; definition of, 193 f., 463.
Influences, emotional, 8.
Inheritance, 120 f.
Instance, meaning of, 20.
Instances, 121 f., 178 ff.
Instincts, 337.
Integers, 456.
Intellectualism, 80 f.
Interaction, 267, 272, 290; limitations of, 292 f.
Internal relations, formulation of theory of, 37 ff.
Introspection, 264.
Intuition, 124 f., 277.
Inverse, the, of a relation, 101.

James, Wm., 9, 12, 84, 72 f., 110, 124, 206, 264, 273 ff., 283 ff., 290, 293, 297 ff., 302 f.
Joachim, H. H., 76, 331, 350.
Jones, Sir Henry, 206.
Justice, 152; absolute, 498 ff.; as a non-causal efficiency, 450 f.

Kant, 47, 58, 74, 90, 108, 160 ff., 185, 214, 216 ff., 333.
Kellogg, V. L., 288.
Kempe, A. B., 175.
Knower, Absolute, The, 333.
Knowing; and known object, as related and independent, 369 ff.; and the system Σ, 321; as a relation or a dimension, 88 ff.; as

a substance, 88; as constitutive, 223 ff.; definition of, 97; in detail and by "lump," difference between, 381 ff.; nature of, 212 f.; subsistent, as a presupposition, 428; the Being of, as a presupposition of philosophy, 423 ff.; structure of, in Phenomenalism, 220 f.
Knowing situation, the, 28, 81 ff., 291 f., 312 ff., 373 ff.; analysis of, by method of analysis *in situ*, 211 ff., 369 ff.; and theory of external relations, 41 f.
Knowledge; as an organic system, 76; by specification, 158 f.; by type, 158 f.; conditions for, 109; extent of, 381 ff.; problem of, in development of philosophy, 230 ff.; nature of, 71 ff.; origin of, 79 ff.; origin of, solution of problem of in Phenomenalism, 227; none other than empirical difficulties in, 378 ff.

Lamarck, 285 ff.
Law, 62 ff.; and laws, 54 ff.
"Leap," the inductive, 122.
Leibniz, 47, 58, 62, 90, 108, 129.
Leucippus, 262.
Levels, of reality, 449 f.
Life, 512 ff.
Linearity, postulate of, 461.
Lobatschewsky, N., 6.
Loci, logical, 139 f.; *see* Contradiction and Exclusion.
Locke, 46, 71 f., 108, 181, 185, 204, 214, 242 f.
Loeb, J., 92, 262, 343, 478.
Logic, 12 ff.; as objective, 15; discovery in, 29, 173; the constitutive, of Kant, 199; the new or non-Aristotelian, 11, 28 ff., 36 f., 156 ff., 255 f., 358 ff.; the new, bibliography of, 175; the new, contrast with the old, 173 ff.; pragmatic theory of, 109 ff., 199; principles of, as laws of mind, 106; types of, and theories of relations, 198 ff.
Logic, the "old," or traditional, 28, 101 ff., 105, 199, 340; application of, 213 ff.; and the new, contrasted, 366 ff.; as transformed into Hegelian logic; *see* Underlying reality theory of relations, proof of; character of, 32 ff., 155 ff.; criticism of, 35 f.; influence of, in monistic systems, 352 ff.; origin of, 29 ff.; u~~se, of,~~ 279.
Logical entities, objectivity of, 20.
Logical priority; among the sciences, 465 ff.; as a presupposition, 429; instances of, 386 f.
Lovejoy, A. O., 93, 376, 439, 440.

Mach, E., 27, 46, 246 f.
Major term, 117 f.
Malebranche, 268.
Manifoldness of the universe, 49 ff.
Marshall, H. R., 264.
Marvin, W. T., 128, 206, 492.
Materialism, 258, 262 f., 370 f.; as a phenomenalistic philosophy, 263.
Materialists, 262.
McCosh, J., 408.
Measurement, 453; and numbers, 468.
Mechanics, 281 ff.; *see* Motion.
Mechanism, in biology, 342 ff., 388.
"Member of," relation of, 102.
Memory, 126.
"Mentionables," 489 ff.
Middle term, 116.
Mill, J. S., 46, 121, 130.
Miller, D., 89.
Minor term, 117 f.
Minuteness, 49.
Monism, 371 f., 432 ff.; logical, 24, 55; in subjective Idealism, 239.
Monistic Vitalism, 343 f.
Montague, W. P., 483, 492.
Moods, of categorical syllogism, 117.
Moore, G. E., 103.
Moral consciousness, the, 506 f.
Moral situation, the; its nature, 503 ff., 513 f.
Motion, 179 ff., 184 f., 313, 383 ff.; *see* Acceleration, Analysis, Correlation, Continuity, Density, Discontinuity, Finite, Infinity, Order, Series; analysis of, 279 ff., 464 ff.; analysis of, as evidence for external relations, 367 f.; incorrect and correct analysis of, contrasted, 170 ff.; modern and correct analysis of, 281 ff.; Zeno's analysis of, 166 ff.
Münsterberg, H., 60, 69, 330, 287.
Mysticism, 277; as rationally defended, 104; bibliography of, 407; limited validity of, 407.

Naturalism, 9 f., 47 f., 214, 370 f.,

392 f., 396, 444 f.; criticism of, 268 ff.; as a generic doctrine, 261; bibliography of, 259.

N-dimensions, 473 ff.

Necessity, logical, 115.

Negation, 136 ff.

Negative, the, the nature of, 414 ff.

Neo-realism, 48.

Neo-realists, 46.

New Rationalism, The, 43.

Newton, 58.

Nietzsche, 339.

Non-additive wholes, and values, 496 ff.

Non-epistemological problems, independence of, 431 f.

Numbers, 18; cardinal, 453 ff.; analysis of, 455 ff.; irrational, 458 ff.; natural, 150 f., 456; negative, as realities, 456; real, 461; signed, 415 ff.

One, The Absolute, 321 ff., 330 ff.; as a "mentionable," 358 f.; as Oneness, 359 ff.; as a series, 359 ff.; contradictions in proof of, 357 ff.; nature of, 354 ff.; as *summum genus*, 356 ff.

One and Many, 446, 475 ff.

One-one correspondence, definition of, 466.

Oneness, of the universe, 327.

One, The, not all-inclusive, 436 f.

One Truth, as a system of truths, as a presupposition, 427 f.

Ontological argument, 63.

Ontological problem, solution of, in Monism, 345 ff.; solution of, in Phenomenalism, 226.

Ontology, of Subjective Idealism, 238 f.

Order, 11, 13 ff.; *see* Series, and Logic.

Organic systems, 422.

Organisms, 55, 184 f., 446 f.

Organization, 56 ff., 246 f., 446 ff.

Origin of knowledge, in monistic systems, 352.

Ostwald, W., 47, 262.

Outcomes, practical, 275 ff.

Pan-logism, 9 f., 330.

Pantheism, 59 ff., 329.

Panzoism, 34.

Parallelism, psycho-physical, 264 ff., 370.

Particulars, 11.

Paulsen, F., 89, 152.

Peirce, C. S., 175, 293.

Perfect, The, 497 ff.

Perfect Being, 63 ff.

Perfectionism, in monistic systems, 348.

Perry, R. B., 81, 285, 492.

Personality, the unity of, 325 ff.

Pessimism, 52, 339 ff.

Phenomenalism, 34, 48 f., 88, 108 f., 160 ff., 214, 298 f., 308, 311 ff., 330 f., 333 ff., 338; bibliography of, 232; contrast with Subjective Idealism, 236 f.; criticism of, 230 ff.; in Objective Idealism, 331 ff.

Phenomenalists, 72 ff.

Philosophy; and its environment, 44 ff.; views as to the nature of, 46.

Physical entities, 444 ff.

Physical Thing, the; definition of, 29; influence of, as a model for thinking, 32 ff., 213 ff.; influence on the philosophy of the tradition, 29.

Pitkin, W. B., 89, 492.

Plato, 13 f., 60, 90, 152, 203, 255, 326, 498.

Pluralism, 358 ff., 373 f., 385 ff., 432 ff.; in Subjective Idealism, 239; logical, 24, 43.

Poincaré, H., 12, 145, 274, 293.

Points, 162, 178 ff.; *see* Space.

Positivism, 9 f., 47; bibliography of, 241; cosmology of, 249; ontology of, 248 f.; presuppositions and criticism of, 251 ff.; solution of problems in, 248 ff.; teleology in, 249 f.; theology in, 249; valid elements in, 255 ff.; "values" in, 250.

Positivists, 247.

Postulates; as consistent, related *and* independent, 462; in geometry, as related and independent, 420 ff.; in philosophy, 9 ff.; for Objective Idealism, 318 ff.; for Positivism, 245 ff.; for series, 455 ff.; of Phenomenalism, 216 ff.; of Subjective Idealism, 233 ff.

Postulate, the freedom to, 390 ff.

Postulation; method of, 420 ff.; method of explicit, 6 ff.; method of, in philosophy, 203 ff., 215.

Pragmatism, 9 f., 88, 109 ff., 214, 370 f., 392 f., 396, 398 ff., 507; Absolute, Royce's position of, 18; as a self-contradictory system,

134 ff.; bibliography of, 307; criticism of, 301 ff.; inconsistencies in, 399 ff.
Pragmatists, 46, 54 ff., 72 ff., 284.
Predicament; the ego-centric, 81 ff., 206, 315 f.; solution of, 365 ff., 372 ff.; the value-centric, 206 ff.
Premises, 116; establishment of, 144 ff.; of disjunctive syllogism, 141 ff.; of hypothetical syllogism, 147 ff.
Presupposition by denial, 222; of the principle of contradiction, 140; instances of, in Individualism and Skepticism, 405 ff.; proof of, as a logical principle, 133 f.; psychological element in, 134 f.; the test of, 132 ff.; use of, 17, 19.
Presupposition of premises, 120.
Presuppositions; of systems opposed to Realism, 26 ff.; those accepted by Realism, 231 f.
Principles; as useful, 288; of induction, 122; of proof, Pragmatism's view of, 297 f.
Priority, logical, 86, 409 ff.; principle of, 384 f.
Problems; artificial, 312; false, 44; false, in philosophy and science, 397 ff.; philosophical, and history, 397 ff.; philosophical, and their solution, 5; philosophical, nature of, 396; real, 312 f.
Product, logical, 17.
Progress, in philosophy, 24; problem of, 509 ff.
Progression, definition of a, 461.
Proof, material principles of, 200.
Propositions; Being of, as a presupposition, 409 ff.; contradictory, 415 ff.; examples of, 102; relational, 173; self-contradictory, 132 f.; self-contradictory, examples of, 139 f.; types of, 112 ff., 115, 117, 411 f.
Protoplasm, 282.
Psychism, 268 ff., 370; modern, Idealism as a, 309 f.
Psychological problem, solution of, in Subjectivism, 239 f.
Psychology, 299, 335 f.; of thinking, bibliography of, 95 f.
Purpose, 55 f.

Qualitative difference, between knowing and *known* object, 373 f.
Qualities; disembodied, 475 ff.; physical, as subjective, 233 ff.; new, appearance of, 447 ff.

Rationalism, 48, 79 f., 486; *see* Realism.
Rationalization, attack on, 278 ff.
Realism, 11 ff., 23, 25, 43, 84 ff., 212 ff., 242 f., 272 f., 297 f., 310, 316, 406; and epistemology, 431; and the problem of error, 374 ff.; and the theory of external relations, 41 ff.; as a basic position, 9 ff.; as presupposed by opposed systems, 369 ff., 408 ff., in logic, 100 ff.; in monistic systems, 347 f.; in Naturalism, 260 f.; in Phenomenalism, 230 ff.; in philosophizing, 104 ff.; in Positivism, 251 ff.; in Pragmatism, 301 ff.; in Subjective Idealism, 238 ff.; The New, bibliography of, 495 f.
Reality, ultimate nature of, for Realism, 432 ff.
Reason, Freedom of, as a presupposition, ~~393 ff., 427.~~
Reasoning, 390 ff.; by the use of words, 95 ff.; logical conditions of, 16, 99 ff.
Reductio ad absurdum, 132 f., 150 ff., 160 ff.
Reduction, of some entities to others, 432 ff.
Reid, 408.
Relatedness; *see* Independence.
Relation; definition of, 21; how it relates, theories as to, 176 ff.; inverse, 191; of knowing to its object, appearance and disappearance of, 380 f.
Relations, 14 ff.; additive, 34 f., 281 f.; as independent, 70 f., 86, 384 ff.; *see* Independence; asymmetrical, 191; asymmetrical and transitive, 36, 159, 455 ff.; *see* Space and Time; Being of, as a presupposition, 409 ff.; causal, 387 ff.; dyadic, 191; external, instances of, 382 ff.; external, as found in knowing situation, 212 f.; external, theory of, proof and criticism of, 178 ff.; functional, 208 ff., 291 f.; internal, theory of, application of, 213 ff.; internal, theory of, as postulated for knowing situation, 216 ff.; intransitive, 191; modification theory of, 37; modification theory of, evidence for, and proof of, 182 ff.;

modification theory of, in Subjective Idealism, 236 ff.; non-additive, 163 f., 281 ff., 387 f., 447 ff.; non-causal, 387 ff.; non-symmetrical, 191; non-transitive, 191; not causally related, as a presupposition, 429; of inclusion and exclusion, 112 ff.; of similarity and difference, 112 ff.; one-many, 192; one-one, 192; symmetrical, 191; theories of, and analysis, 426 f.; theories of, bibliography of, 181 f.; theory of external, formulation of, 38; theory of external, evidence for, 39 ff.; theories of, use of, in deriving philosophical systems, 365 ff.; transitive, 191; types of, 100 ff., 174 f., 411 ff.; types of, in modern logic, 157 ff.; types of, in traditional logic, 155; types of, summary, 190 ff.; underlying-reality theory of, 38, 317 ff.; underlying-reality theory of, as a postulate, 331 ff.; underlying-reality theory of, criticism of, 180 f., 187 ff.; underlying-reality theory of, proof of, and evidence for, 185 ff.

Relativism, in Pragmatism, 300.

Religion, 64 f.

Religious consciousness, the, 69.

Renaissance, 203 f.

Responsibility, 394 f.

Rest, 170 ff.

Rickert, H., 69.

Riemann, B., 6.

Romanticism, 342 ff.

Royce, J., 12 ff., 62, 135, 175, 183, 186 f., 191, 193, 229 f., 330 f., 350, 410.

Russell, B., 12, 27, 37, 103, 136, 163, 166, 173, 175, 178, 191, 193, 293, 453.

Sabatier, A., 65.

Schelling, 10, 318 ff.

Schiller, F. C. S., 54, 110, 283, 297 f.

Schmidt, K., 7, 12.

Schopenhauer, 59, 318 ff., 339.

Schulze, G. E., 218, 312.

Science, 179 ff., 204 ff.; as positivistic, 256; influence of, in philosophy, 257 ff.; modern, logic of, 10, 126 ff.

Sciences, the natural, procedure of, 274 ff.

Self, Absolute, The; *see* Absolute One.

Self-contradiction, 183, 417 ff.

Self-contradictory, The, 132 ff.

Self-evidence, 8 f., 165 f., 221, 368; the test of, 129 ff.

Self-evident propositions, examples of, 129.

Self-refutation, 274.

Self, the, 233 ff.; as substance, 216 ff.; the transcendental, 220 ff.

Sensationalism, 79 f., 276 f.

Sensations (and impressions), 243 ff.

Sense experience, 123 f.

Series, 10, 18, 56 f., 156 ff., 169 ff.; correlation of, 23; definition of, 193; nature of, bibliography, 455; postulates for, 455 ff.

Sharp, A. B., 124.

Sigwart, C., 189.

Similarity, relation of, 188 ff.

Simples, 161 ff., 178 ff.

Singer, E. A., 89.

Situation, the thinking, analysis of, 114.

Size, 145 f.; of the universe, 468.

Skepticism, 402 ff.

Smith, N. Kemp, 206.

Soddy, F., 510.

Solipsism, 93.

Sophists, 78.

Space, 162; analysis of, 279 ff., 451 ff.; analysis of, modern, 158 ff.; *see* Analysis, Continuity, Discontinuity, Density, Finite, Infinity, Series; the world of, 145 f.

Spaulding, E. G., 89, 158, 164, 177, 230, 280, 467, 478.

Spencer, 46 f., 130.

Spinoza, 10, 46 f., 59, 63, 108, 214, 311.

Standards; æsthetic, 289; ethical, 289.

States of affairs, 11, 25, 84 ff., 104, 112 ff., 318 f.; as known in different philosophical systems, 369.

Stein, L., 9.

Strata, of the universe, 56.

Strong, C. A., 268.

Stuff and stuffs, 51 ff.

"Sub-classes," 458 ff.

Subjective Idealism, inconsistencies in, 240 ff., 243.

Subsistents, 11 ff., 56, 98, 148, 294 f., 305 f., 377 f., 394, 444 f.; and causation, 390 f.; and existents, theory of, bibliography of, 493; definition of, 490; kinds of, 491 ff.

Substance, 33, 155 ff., 161 f., 214 f., 270 ff., 308 ff., 435 f., 439 ff.; concept of, as applied to "knowing," 28, 42; in monistic systems, 353 f.
Substance-philosophies, 9.
Substance view, limitations of, 292 f.
Substratum, of the universe, 328.
Subtraction, as an operation, 416 ff.
Summum genus, 55 f.
Syllogism, the, 119; as included in the new logic, 36; categorical, 102 ff., 111 ff.; incorrect, examples of, 117.
Symmetry, 21 f.
Synthesis, 158 ff.; creative, 479 ff.; *see* Freedom; non-additive, 282 ff.
System, meaning of, 421 ff.
System, the Being of, as a presupposition, 421 ff.
Systems, philosophical and geometrical, comparison of, 5 ff.; philosophical, classification of, 9 ff.
System Σ, The, 18.

Taylor, A. E., 324 f., 331.
Teleology, 152 f., 266 f.; immanent, 515 ff.; immanent, in Voluntarism, 338; transcendent, 515 ff.
Terms, Being of, as a presupposition, 409 ff.; self-contradictory, 132 f.
Thales, 51.
Theism, 58 ff., 235 ff., 329.
Theological problem, solution of, in monistic systems, 346 f.
Thermo-dynamics, 510 ff.
Things-in-themselves, 217 ff.
Thinking, "Laws" of, 222.
Thorndike, E. L., 26.
Time, analysis of, 451 ff; *see* Analysis, Continuity, Discontinuity, Density, Finite, Infinity, Series.
Tradition, The Aristotelian, 9 ff., 24 ff., 64 f., 391; character of, 31, 326; dominant concepts of, 32; in logic, 105 ff.; influence of, 8 f.
Transmission, social, 111.
Tropisms, 337.
Truth, 19, 144, 276; absolute, 74 ff.; absolute standard of, in Pragmatism, 296; and certainty, not identical, 405 ff.; as independent of absolutely true tests, presupposition of, 426; as relative, 74 ff.; as a satisfaction generated by belief, 399 ff.; as a value, 70 f., 207 ff.; as distinct from tests of, proofs, evidence, and certainty, 424 ff.; as distinct from successful working, as a presupposition, 425 f.; "copy theory" of, 71 ff.; definition of, 423; "material," of premises, 119 f.; nature of, 71 ff., 396, 405 f.; not identical with usefulness, 398 ff.; organic theory of, 76, 350 f.; Pragmatism's definition of, 276; pragmatic theory of, 124 f., 289 ff.; test of, in monistic systems, 351 f.; test of, lack of any absolute, 351 f.; tests of, psychological, 129 ff.; the Being of, as a presupposition in philosophizing, 423 ff.; theory of, in Phenomenalism, 226 f.; theory of, in Positivism, 251; the test of, 74 f., 76.
Truths, The system of, 75 ff.
Types of entities, manifold of, as a presupposition, 429.
Types of knowing, different, as a presupposition, 429.
Typical cases,

Ueberweg, 109.
Underhill, E., 124.
Unities and wholes, 197 ff.
Unity, 180 f., 197 ff., 319 f.; absolute, 185 ff., 317 ff.; metaphysical or transcendent, as self-contradictory, 198.
Universals, 11, 152.
Universe, The; as a machine, 153 f.; as an organism, 152 ff.; as a system, *see* System, 436 ff.; as a totality, 488 ff.; the, examples of kinds of entities it includes, 433 ff.; the unity of, problem of, 317 ff.
Unknown, as distinct from unknowable, as a presupposition, 429.
"Unreal" entities, nature of, 489 f.
Usefulness, 286 ff., 290 ff.

Values, 60 f., 66ff., 206; æsthetic, 502 f.; and consciousness, 69 ff.; as objective, 501 ff.; as qualities of relational complexes, 499 ff.; by what conditioned, 68; definition of, 66; conservation of, 69, 509 ff.; ethical, 394 f.; examples of, 497 ff.; organization of, 508 ff.; problems of, solution of, in monistic systems, 347; problem of, solution of, in Phenomenalism, 224 f.; the ultimate standard of, 67; theory of, bibliography of, 507.

Variables, 179 ff.; independent, 382 ff.

Veblen, O., 12.

Velocity, 39 f.; *see* Motion.

Venn, I., 121.

Vitalism, 342 ff., 388.

Voluntarism, 9 f.

Von Hügel, F., 124.

Ward, J., 264.

Watson, J. B., 89.

Watson, John, 331.

Whitehead, A. N., 12, 136, 175, 193.

Wholes; causal, 195 f.; consistent, 196 f.; contradictory, 196; implicative, 197; organic, 184 f.; organic, definition of, 195; organized, 361 ff., 472 ff.; *see* Relations, Space and Time; the experience of, 125.

Will, Freedom of, 394 f.; in Voluntarism, 335 ff.

"Will to live," 339 f.

"Will to power," 339 f.

Windelband, W., 42, 69.

Woodbridge, F. J. E., 89, 481.

Words as symbols, and their meanings, 96 ff.

"World," The, as plastic, 110 f.

World-soul, 328 ff.

Wundt, W., 109.

Young, J. W., 175.

Zeno, 166 ff., 170 ff.

Zero, 18; as a reality, 456; definition of, 415 ff.

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